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Literary Dynamics in Nonlinear Narratives

Flavia Larocca

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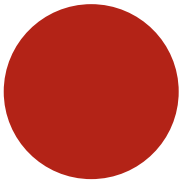

Literary Dynamics in Nonlinear Narratives

Flavia Larocca

Mestrado em Multimédia da Universidade do Porto

Aprovado em provas públicas pelo Júri:
Presidente: Carla Susana Lopes Morais
Vogal Externo: Luísa Maria Lopes Ribas
Orientador: José Miguel Santos Araújo Carvalhais Fonseca

ABSTRACT

The theory of literary dynamics states that the order of a text has a fundamental role in creating its meaning. When reading a text we are making predictions, anticipations and connections, influenced by a set of frames given by literary or social conventions that we are familiar with. In nonlinear narratives, this dynamic process changes completely due to the absence of a stable frame of reference. It becomes the process through which the narrative shapes itself according to the reader's choice of taking one of the traced directions, of hearing one of the existing voices and of following one of the possible paths.

This dissertation aims at tracing a line connecting traditional and digital literature on the basis of how literary dynamics works in nonlinear narratives. The analysis following a dialectic approach by taking, in turn, the perspective of the author, the medium and the reader.

Moreover, we will produce a practical output with the creation of a case study in the form of a text for a children's book and the script for an appBook showing the way the narrative changes adapting to the characteristics and expressive potential of the two different media.

RESUMO

A teoria da dinâmica literária defende que a ordem de um texto é fundamental na criação do seu significado. Quando lemos um texto estamos a criar previsões, antecipações e conexões, influenciados por convenções literárias ou sociais que nos são familiares. Em narrativas não lineares este processo dinâmico altera-se completamente devido à ausência de tais referências pré-estabelecidas. Torna-se então no processo em que a narrativa se molda de acordo com as escolhas do leitor de decidir por uma das direcções, de ouvir uma das vozes e de escolher um dos caminhos possíveis.

Esta dissertação procura traçar uma linha que ligue a literatura tradicional à literatura digital com base no funcionamento das dinâmicas literárias em narrativas não lineares. A análise, através de uma perspectiva com base dialética, foca-se no ponto de vista do autor, do meio e do leitor.

Irá ser também criado um caso de estudo na forma de um texto para um livro infantil e de um guião para um appBook, demonstrando assim na prática a forma como a narrativa se adapta a cada um destes meios.

AKNOWLEDGMENTS

Professor Miguel Carvalhais for sharing his expertise, for the valuable guidance and support.
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All the friends and colleagues I have met during these two years in Porto for welcoming me and making me feel at home.
Daniel, for his patience, his precious and sincere advice and for unconditionally believing in me.
La mia famiglia, per essere il mio punto fermo e il mio sicuro appoggio ovunque io vada.

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INTRODUCTION

The concept of narrative as a labyrinth the reader has to go through choosing among a number of different paths, is something that is deep-rooted in literary history.

So called *nonlinear* narratives are considered, in literary theory, those that lack or subvert a straightforward storyline. Narratives that require the reader to make choices, to get lost, to speculate, to discover secret paths, to mistrust, to conjecture and interpret. The reader can be deprived of a solid context and may have to create a personal version of what is happening. Author and reader are not, then, sender and receiver of a message but rather players in a game through which the message is created.

In his *Cybertext: Perspectives on Ergodic Literature* Espen J. Aarseth says that in ergodic literature, a nontrivial effort is required to allow the reader to traverse the text. He recognizes a great number of ergodic books, all along history; although, after the invention of digital computing it soon became clear that a new textual technology had arrived, potentially more flexible and powerful than any other preceding medium.

In digital literature the medium becomes an integral part of the literary product and the reader becomes a player in its full meaning, as the cybertext is a world that is possible to explore, get lost in, and discover secrete paths, not metaphorically, but somehow physically, through the structure of the text itself.

STRUCTURE

In this dissertation we will analyze literary dynamics in nonlinear narratives in traditional and digital literature with a focus on the elements that compose the dynamics of *cybertext.*

The first chapter, *Rhizomatic structures as means to map the contemporary* has the function to set the context of this study and to introduce some relevant concepts such as nonlinear narratives, literary dynamics, cybertext and the rhizome.

The second chapter, *The Author*, begins with the introduction of the genre of ergodic literature and continues questioning about the role of the author in nonlinear narratives, we will also analyze how it has changed along literary history and how it can be challenged by emerging technologies such as artificial intelligence, interactivity and the reader's participation.

In the third chapter, *The Medium*, we will analyze the properties of digital media observing how they can be used as *poetic* tools.

In the fourth chapter, *The Reader*, we will consider the concepts of active reading and interactivity and we will analyze several case studies of nonlinear narratives to follow the path of the reader on their traversal.

After that we will use the same patterns of analysis to present the case study produced for this dissertation, *Rotator.* This practical part of the work will be integrated in the MA final project of our colleague Cátia Vidinhas which consists of the production of a picture book and of a appBook.

I will provide the two narratives, starting from a common theme but developing in different ways adapting to the intrinsic characteristics, properties and potential expression of the two media analyzing the way the narrative can exist in two different versions, independent from one another though, complementary.

CHAPTER 1

RHIZOMATIC STRUCTURES AS MEANS TO MAP THE CONTEMPORARY

1.1 INTRODUCTION

The aim of this first chapter is to define the context of the study starting from the explanation of its title: *Literary Dynamics in Nonlinear Narratives*. What do we mean with the term *dynamics* applied in literary studies? What is a *nonlinear narrative*? In the following paragraphs, starting from the explanation of these terms in this specific context, we will build a connection between nonlinearity and the concept of rhizome as a system to explain the Joycian *chaosmos* of the contemporaneity. Secondly we will try to restrict our scope on nonlinearity in textuality taking into consideration Espen J. Aarseth's model for textual analysis based on a text's traversal functions and the new approach that he introduces with the concept of *Cybertext*: a perspective on textuality considered as a machine that functions as a whole with its medium and all of its possible readings.

1.2 DYNAMICS AND NONLINEARITY

In 2001 game designers Robin Hunicke, Marc LeBlanc and Robert Zubek define the MDA framework as a formal approach to game design and research. MDA stands for Mechanichs – Dynamics – Aesthetics signifying for *mechanics* the set of formal rules, algorithms and conditions that build the game structure, for *dynamics* the way those rules act in motion responding to the player's input and for *aesthetics* the player's experience of the game.

The second element, dynamics, is similarly applied to literary studies connotating "the reader's linking and arranging of text, […] his constant anticipation of forthcoming elements." (Pisarski, 2011)

The theory of literary dynamics states that the order of a text has a fundamental role in creating its meaning.

> The ordering of a group of textual elements is justified by regarding the text as adhering to some order familiar to the reader, an extra-textual order which the text "obeys" or "imitates" (Perry, 1979).

Traversing the text the reader constructs a set of frames based on models they are familiar with (being those models artistic and literary conventions, social conventions or personal experience). The convergence of the details in the text will then be justified by the constructed frames. (Hrushovski, 1974) According to the Russian formalist Viktor Shklovskij the order and distribution of elements may affect not only the reader's attitudes and judgments, but the nature of their other reconstructed meanings as well. The distribution of the material along the text-continuum may delay the reader's comprehension and render it difficult, thus bringing about a renewal of perception or de-automatization. (Shklovskij, 1917)

In certain types of narrative, though, the dynamic process is complicated by the absence of a stable frame for the reader to serve as a constant and determinate reference. It becomes the process through which the narrative shapes itself according to the reader's choice of taking one of the traced directions, of hearing one of the existing voices and of following one of the possible paths. This happens, for example, in those texts that Aarseth defines as nonlinear:

> An object of verbal communication that is not simply one fixed sequence of letters, words, and sentences but one in which the words or sequence of words may differ from reading to reading because of the shape, conventions, or mechanisms of text. (Aarseth, 1997,41)

This definition, despite being quite open is the object of some debate. Firstly used by Ted Nelson in his discussion on hypertext (1987), the term *nonlinear* served to indicate the absence of monosequentiality and has later been criticized by other hypertext theorists who suggested instead *multilinear* or *multisequential* "to stress continuity, relation and connection rather than negation, difference, and distinction". (Liestøl, 1994)

In Gunnar Liestøl's opinion hypertext can be considered nonlinear just on a spatial perspective. Reading itself, in fact, is an action that happens in time, given that there is no such a thing as nonlinear time, reading is always linear. Liestøl gets even more categorical affirming that nonlinear is "an empty term in the discourse on hypermedia, which only shows how preoccupied writers on the subject have been with defining hypermedia in opposition to traditional media". (1994) It is important to point out that while Nelson refers to text and writings as constructed objects, his critics talk about writing and its readings, considering then text as a temporal process. Nevertheless text doesn't necessarily present a temporal dimension, a writing can exist without its reading as a theatre piece still exists without its performance. Quoting Aarseth's *Cybertext* again:

> A piece of writing on paper or a computer screen should not be confused with the act of reading it. To say that hypertext readings must be linear is just another way of saying that they are temporal, which again simply refers to the temporality of our existence. (1997, 46)

An hypertext, built on a topology of links and nodes can be easily described as not linear if, as it often happens, there is more than one possible path to get from a node A to a node B. Discussing on which term between *nonlinear* and *multilinear* is better to use to define such a system, Aarseth recognizes the pertinence of the term *multilinear* in those cases in which such paths never meet, coincide or fork. On the other hand in those cases where

the paths fork, the multiplicity of paths is just potential, it is more precise to talk about a multiplicity of itineraries or courses. In this work we will use the word *nonlinear* to refer to the topology of the texts, rather than their multiple itineraries.

Moreover, the nonlinearity Aarseth talks about is not limited to a particular medium. Despite the progressive development of computer technologies as forms of artistic expression that gave birth to a whole new set of literary genres, nonlinearity and nonlinear texts are not a phenomenon restricted to computers. Numerous of the nonlinear narratives that shall be examined in this work are in print, and some were written before the invention of hypertext or of the computer.

1.3 THE *CHAOSMOS* AND ITS LINEAR MULTIPLICITIES

In 1922 *Ulysses* by James Joyce is published. Openly subverting some fundamental literary and artistic conventions, the work sets its role as an expression of Modernist ideals[1]. A rejection of the classic conventions and the vision of highly complicated and indeterminate world in contrast with the image of order and simplicity given by centuries of classic myths, and Cartesian-Newtonian worldviews.

The indeterminacy pushed almost to its extreme, to the paradoxical coincidence of the opposites, of order and disorder, what Joyce calls the *chaosmos* is a recurrent theme in twentieth century science and art.

As Italo Calvino states:

> The world in its various aspects is increasingly looked upon as *discrete* rather than *continuous*. […] in the sense it bears in mathematics, a discrete quantity being one made up of separate parts. Thought, which until the other day appeared to us as something fluid, evoking linear images such as a flowing river or an unwinding thread […] we now tend to think as a series of discontinuous states… (Calvino, 1986)

1 Joyce's novel describes a day in the life of an advertising canvasser in pre-war Dublin, drawing implicit parallels between his adventures and those described in Homer's Odyssey. Ulysses demonstrates most of the notable characteristics of the modern novel. As an exploration of consciousness or the inner life, it inspired Virginia Woolf's injunction that the novelist should "consider the ordinary mind on an ordinary day" (1925). For Joyce this entails a preference for an anti-hero, or at any rate a hero who does not resemble the heroes of earlier novels, as well as an exploration of subject matter that, while a part of ordinary consciousness, is often taboo in art. As a notable experiment in the rendering of time, Ulysses displays a modernist skepticism about the linear or sequential arrangement of events into traditional plots. In contrast with the earlier tendency to make the prose of novels generally referential, Joyce was particularly self-conscious about the literary quality or style of novelistic language he used; he experimented with narrative devices and combined the realist representation of the world with esoteric symbolism. Finally, Ulysses called attention to its own status as fiction and to relationship between fiction and history, the question of the novel as a modern form of epic. (Pericle Lewis, 2008)

To live in the twentieth century is to cope with the awareness of the possibilities of alternative worlds, alternative selves and endless intersecting stories (Murray, 1997).

Philosophers Deleuze and Guattari offer an effective metaphor for intellectual discourse. They question any kind of dualism and dichotomic opposition in favour of a pattern to describe contemporaneity based on multiplicity. They see the book as an *assemblage* made of lines of articulations, territories and lines of flight and movements of deterritorialization, a *body without organs*, without object or subject:

> As an assemblage a book has only itself, in connection with other assemblages and in relation to other bodies without organs. We will never ask what a book means, as signified or signifier; we will not look for anything to understand in it. We will ask what it functions with, in connection with what other things it does or does not transmit intensities, in which other multiplicities its own are inserted and metamorphosed, and with what bodies without organs it makes its own converge. (Deleuze & Guattari, 1987, 407)

They describe a text that consists of relations, whose function is not that of signifying but that of mapping the realm of relations that is the system of thought.

Similar to Joyce they see the world as chaotic and subverting the classic determinate and dualistic relationship through which it has been long described. Nevertheless they still see the book as the image of this world, made up of relations and connecting lines, a *radicle-chaosmos* well represented by the concept-figure of the *Rhizome*.

This image, inspired by the potato roots describes a system that connects any point with another point:

> It is composed not of units but of dimensions. Or rather directions in motion. It has neither beginning nor end, but always middle (*milieu*) from which it grows and which it overspills. It constitutes linear multiplicities with n dimensions having neither subject nor object, which can be

> laid out on a plane of consistency, and from which the One is always subtracted (*n*-1). (1987, 408)

An important characteristic of the rhizome is its constant changing, growing and becoming in all directions, unlinked to any centrality , hierarchy, beginning or end. Unlike Joyce's chaosmos, the rhizome offers the hope of knowability, offers a way out of the paralysis[2] that Joyce depicts: the immobility in front of what we can no longer describe as we used to. If Joyce finds a way out in the possibility of epiphany[3]: the sudden and unexpected manifestation of divinity to the human being and the human being's consequent awareness of their reality, Deleuze and Guattari's way out comes from underneath rather than from above. To the metaphor of the *snow upon all the living and the dead*[4] that depicts the mystical connection that unites all creatures independently from space and time, they oppose the image of the potato root. To the sudden, overall and metaphysical image "from above": the closing plan of Joyce's *The Dead* that moves from a garden seen through a window up to a cemetery far away and the snowfall that covers Ireland and ideally the whole present and past world; they oppose a down-to-earth mapping of the complicated ever-growing and ever-changing relations this chaosmos is made of.

2 The paralysis depicted by Joyce is the political, religious and cultural condition of Ireland at the beginning of the XXth century. This paralysis becomes a metaphor for the moral and psychological condition of the characters of his works, incapable of any reaction or awareness of their condition, the impossibility of making any action. The acquisition of the awareness of the paralysis, and usually the climax of the narrative is the epiphany.

3 Joyce gave this definition of epiphany through the words of Stephen Dedalus, the main character of *Portrait of the Artist as a young Man* (1916): "By an epiphany he meant a sudden spiritual manifestation, whether in the vulgarity of speech or of gesture or in a memorable phase of the mind itself. He believed that it was for the man of letters to record these epiphanies with extreme care, seeing that they themselves are the most delicate and evanescent of moments." Epiphany literally means 'manifestation' or showing as in the showing of the Christ child to the Magi. In Joyce's conception it indicates that moment when a simple object or fact, an ordinary situation flashes out with meaning and make a person realize their condition.

4 Quote from the concluding monologue of Joyce's short story *The Dead* (1914).

1.4 CYBERTEXT

The whole concept of textuality is questioned by Aarseth in the attempt of creating new frames for literary theory. Such frames would allow to comprehend both linear and nonlinear narratives as well as print and computer-produced works.

He recognized *reading*, *writing* and *stability* as the elements that made up the notion of what a text, as commonly perceived, is:

> [reading] A text is what you read, the words and phrases that you see before your eyes and the meanings they produce in your head. [writing] A text is a message, imbued with the values and intentions of a specific writer/genre/culture. [stability] A text is a fixed sequence of constituents (beginning, middle, end) that cannot change, although its interpretation might. (Aarseth, 1994, 763)

Nevertheless, it is often forced, if not incorrect, to apply those categories on nonlinear texts that can be read in different ways, even ways that the author had not planned, and that are susceptible of the most various changes.

According to Aarseth it is important to distinguish between two different aspects of text: the *informative* and the *interpretable* aspect, meaning with the former the perspective of the text as a technical, historical and social object and with the latter the perspective of the text as it is individually received and understood by the reader. As for the informative aspects it may be considered as constituted by a *script*, the ensemble of the visible elements it is made of, such as words and spaces; and a *practice*, the sequence of action that determines the way it is used to reach the mind of the reader.

According to these parameters Aarseth builds a whole new *textonomy*[5]. Writing, to Aarseth, is a form of meaning making which can be broken into two basic units, *textons* and *scriptons*. Textons are the smallest units of discourse, they are bits of information, that in context, convey meaning. Scriptons are unbroken sequences of textons, which, together, build a set of relations that produces the context needed for the reader to get the *interpretable* perspective on the text. (Aarseth, 1994)

5 "A Typology of Textual Communication"(1997)

In addition to these elements Aarseth's attention focuses on *Ergodic* text, that he defines as texts whose traversal requires a nontrivial effort on the reader's part. Therefore, texts acquire a topological dimension and can be analysed on the basis of the *traversal functions* that take the reader from a point A to a point B: "the conventions and mechanisms that combine and project textons and scriptons to the user (or reader) of the text." (1994, 767)

These can consist of a way of accessing the text or of a set of instruction for its traversal, and can be classified according to a set of variables:

- Dynamics: in a static text the scriptons are constant. In a dynamic text the contents of scriptons may change while the number of texton remains fixed, or the number of textons may vary as well.
- Determinability: The stability of the traversal function. A text is determinate if the adjacent scriptons of every scripton are always the same; if not, the text is indeterminate.
- Transiency: If the mere passing of the user's time causes scriptons to appear, the text is transient; if not, it is intransient.
- Perspective: If the text requires the user to play a strategic role as a character in the world described by the text, then the text's perspective is personal; if not, then it is impersonal.
- Access: If all scriptons of the text are readily available to the user at all times, then the text is random access; if not then access is controlled.
- Linking: A text may be organized by explicit links for the user to follow, conditional links that can only be followed if certain conditions are met, or by none of these.
- User Functions: Beside the interpretative function of the user, which is present in all texts, the use of some texts may be described in terms of additional functions: the explorative function, in which the user must decide which path to take, and the configurative function, in which scriptons are in part chosen or created by the user. If textons or traversal functions can be added to the text, the user function is textonic. If all decisions a reader makes about a text concern its meaning, then there is only the interpretative function involved. (Aarseth, 1997, 62-64)

Aarseth's textonomy refuses a classification based on text or genres or medium to prefer an approach based on their functional differences. Text is considered as a machine, the words are not separated from their readings but work together to convey a meaning which is different for every reader at any time.

The word used to depict such a perspective is *cybertext*. The term stresses the interdependency of the text with the medium through which it is expressed and its user/reader. The medium is not taken for granted, nor studied separately or used as a mean to classify textuality, rather it is considered as an organic part of the text, like the words, the punctuation or the spaces.

In this sense, *cybertext* can be considered:

> A perspective on all forms of textuality, a way to expand the scope of literary studies to include phenomena that today are perceived as outside of, or marginalized by, the field of literature—or even in opposition to it, for purely extraneous reasons. (Aarseth, 1997,18)

In 1987, computer game designer Chris Crawford introduced the concept of *process intensity*, opposed to that of *data intensity* to be applied to computer games as well as other kinds of software:

> Process intensity is the degree to which a program emphasizes processes instead of data. All programs use a mix of process and data. Process is reflected in algorithms equations, and branches. Data is reflected in data tables, images, sounds, and text. A process-intensive program spends a lot of time crunching numbers; a data-intensive program spends a lot of time moving bytes around. (Crawford, 1987)

Likewise, the kind of textuality that Aarseth describes can be considered as process intense in the way that it transcends, from the mere function of transmitting a message to the reader. The fact that text, medium, author, reader and readings are thought of as a whole, as a system working in synergy, moves the focus of attention from the contents that are exchanged to the act of exchanging them, from the data to the process.

1.5 CONCLUSION

Rhizomatic structures, nonlinear by definition, are here considered as a system to explain reality while building it, a mean to map the contemporary world discovering the dynamics it is made of. The rhizome is the mean through which it is possible to navigate inside the paradigm Mechanics – Dynamics – Aesthetics. Keeping the focus on the *process intensity* rather than the *data intensity*.

The process, turns out to be the focus of the attention. Process intended also as the set of links and connections through which the user navigates to explore hypertext, as the ever growing and ever changing lines that compose the rhizome, as the metaphysical epiphany that connects Joyce's characters to all the living and dead creatures and as the connection with medium and readings that makes of a text, a *cybertext*.

CHAPTER II

THE AUTHOR

2.1 INTRODUCTION

In this chapter we will analyze nonlinear texts from the point of view of the author.The first part will be dedicated to a further analysis of the theme of *cybertext* through the introduction of the concept of *ergodic* literature. This term, introduced by Aarseth (1997) and adapted from physics, derives from the Greek words for work, *ergon*, and for path, *hodos*, and indicates a phenomenon regarding texts that are not simply read but are *traversed*, and require a *work* on the part of the reader that goes beyond the interpretative function, and therefore is *nontrivial*. Therefore we will take into consideration some examples of these texts and the characteristics that make them *ergodic*, with particular attention to the works of the Oulipo group.

If the first part of the chapter deals with works that do not necessarily require a computer to be created, we will then focus on texts that employ the computer as an expressive tool that may assist an author during the creative process in a range of different ways. We will concentrate on those procedures and those works in which the computer acquires a *poetic* function[6].

This approach will lead to the third and last part of this chapter dedicated to the debate about authorship in digital literature. Starting from the proclamation of the "death of the author" by French critic Roland Barthes in 1969, who argued that literature should be analyzed exclusively based on text and not according to the relation with the writer; we then apply this concept of authorship to digital media. If on one side the role of the author is even more threatened, due to the progressive mechanization of writing and the change of the author-reader relationship due to the increasing participatory aspects in digital literature that enhances the reader's freedom; on the other hand there is the less radical view of the changing role of the author, that becomes the builder of a whole set of narrative paths and possibilities open for the interactor to choose. They give the tools and the instructions to the reader, whose freedom is then not complete, rather is a freedom of choice among the possibilities provided by the author. (Murray, 1997)

6 The term Poetic derives from the Greek noun *Poiesis* that derives from the verb *Poieo* and can be translated with the words to *make, to invent, to compose*, and can also indicate the specific act of composing poetry. According to Aristotle *Poiesis* (antithetical to *Praxis*) is the act of productive and technical making, the one of the craftperson that makes something from nothing, guided from the idea (*eidos*) and acting through the technique (*techne*). (Perry, 1979)

2.2 ERGODIC LITERATURE

The concept of *cybertext* focuses on the text as a machine. The consumer of the text as well as its medium turns out to be the centre of attention, considered as an organic part of the text itself. The reader of a *cybertext* not only puts on use what Aarseth calls the *interpretative* function but also one or more of the *configurative*, *explorative* and *textonic* functions. The result is the *ergodic* process, in which "nontrivial effort is required to allow the reader to traverse the text". (Aarseth, 1997,1)

If non-ergodic works often present worlds that can ideally be explored by the reader, ergodic works not only present a world, but rather consist of a world, they are themselves the world they describe or the world of the text machinery employed to describe the narrative's world. The *nontrivial effort* a user performs on an ergodic text engages with the text's primary function. It is not peripheral, resting only on the surface, but performed within the structure. The purpose of this effort is the *completion* of the narrative, of the process of traversal. (Aarseth, 1997, 20). Users of an ergodic work of literature are integrated in such a way with the functional processes of the text that their action completes the structure, and thus the narrative, of the text. (Weidemann, 2000) The ergodic texts can then be compared to a labyrinth, that the reader has to explore in order to find their way out.

Although the metaphor of the labyrinth is not at all new to literary theory, it presents here a structural difference: while the classical Minotaur's labyrinth has just one path and one exit that the hero has to find in order to save a life, the labyrinth of *cybertext* is multicursal. There is no unique right path, not a unique solution, but that same set of linear multiplicities where the most important thing is not to get to the end, but the path itself, once more not the result, the data, but the process.

It is possible to find works of *ergodic* literature all through literary history, from e.g. the *I Ching*, a Chinese text of oracular wisdom, dated back to the Western Chou dynasty (1122-770 BCE) to the works of the Oulipo group (Ouvroir de Littérature Potentielle), founded in France in 1960. It is then important to point out in what way these works can be considered *ergodic* and what the *nontrivial effort* that Aarseth talks about consists of. "A text such the *I Ching* is not meant to be read from beginning to end but entails a very different and highly specialized ritual of perusal" writes Aarseth (1997,2), the

I Ching, in fact, is planned to work as a system of oracular divination one can do by oneself, following a specific set of instructions. It is made of sixty-four hexagrams, which are the binary combinations of six whole or broken lines, each hexagram containing a main text and six small ones. The reader begins by formulating a question that he intends to find an answer to, then he throws 3 coins for six times and, according to a randomizing principle, the texts of two hexagram are combined, producing one of 4096 possible texts (Aarseth, 1997,9-10). The text found is interpreted to serve as an answer to the question previously formulated. It is this process, this ritual, that makes of the *I Ching* an ergodic text, following Aarseth's classification.

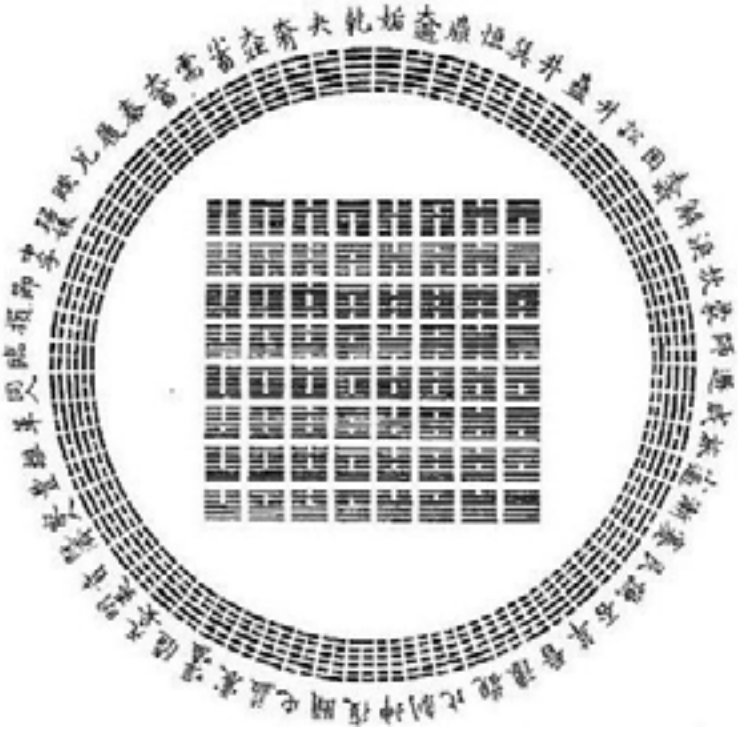

Fig.1 The I Ching *Hexagrams (Wikimedia Commons, 2010)*

Also following Aarseth's typology, the *I Ching* can be classified as indeterminable as the adjacent scriptons of every scripton change, and its typology is organized with conditional linking, as it changes depending on the result of the coins throwing; moreover, the user, in addition to an interpretative function, also has a configurative function as the scriptons are chosen by him, or better, their choice entirely depends on the combination of the results of the six throwings of the three coins

The traversal process is simpler in another text we are taking as example: Guillaume Apollinaire's *Calligrames: poèmes de la paix et de la guerre* (1913-1916), a collection of poems on the theme of World War I.

The readers find themselves in front of words spread around the page to form a drawing, with no indication about the order in which they should be read, on the contrary, they seem to make sense in any order. In this case we can say that the text presents an impermanent perspective, as it requires the reader to play an active role, its access is random as the scriptons are readily available to the user at all times, it has no linking organization, and it gives an explorative function to the reader, as they have to decide which path to take among all of the possible ones.

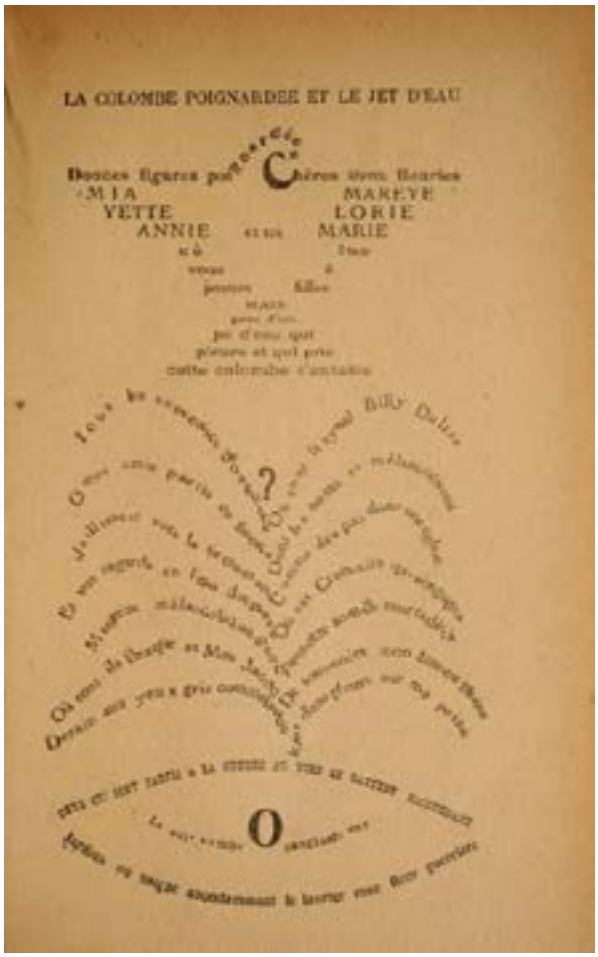

Fig. 2 Calligrames: Poèmes de la Paix et de la Guerre *(Apollinaire 1913-1916)*

Fifty years later, *Composition n° 1* by Marc Saporta (1962) is composed of 150 unbound pages printed on one side only that the reader has to shuffle before reading in a random order. The reader becomes a conscious participant in the composition of the narrative, always seeking to make connections between the different fragments trying to impose a linear sequence. Therefore, we can classify the work as indeterminable, presenting a personal perspective and allowing the reader to develop interpretative and explorative functions.

The creation of experimental works of literature that can, in many cases be considered as *ergodic*, was one of the most important programmatic points of the Oulipo group, founded in France in 1960 from the union of writers and mathematicians who sought to apply procedures and ways of thinking from fields such as logic and mathematics to literature. The result of their research as well as their literary outcomes offer a case study in the understanding of the role of the author in nonlinear narratives. According to the Oulipo, any literary work is the result of the ability of the author to go through the path from inspiration to the complete work, adapting to a range of constraints, varying vocabulary, syntax, metre and literary convention: "Every literary work begins with an inspiration… which must accommodate itself as well as possible to a series of constraints and procedures". (Le Lionnais, 1960, qtd. in Lescure, 1986)

The group's aim was to demonstrate that these constraints are not a limitation to the artistic expression, on the contrary they are "felicitous and generous, and are in fact literature itself". (Lescure, 1986, 172) This approach negates the romantic view of a spontaneous and subjective literature, it rather opens to a consideration of literature as the result of an effort, an objective process that can be analyzed and explored as a scientific subject, like mathematics. Part of the Oulipo's work was dedicated to the study of literary tradition, in particular, to create an anthology of experimental literature, collecting and analyzing all those works that systematically sought to transform rules and constraints into sources of inspiration. On the other hand, they wanted to explore these constraints and analyze how great authors have been dealing with them along literary history to get the tools in order to create new constraints, to synthetize new, experimental techniques, to create new, *potential* literature.

> There are two Lipos: an analytic and a synthetic. Analytic Lipo seeks possibilities existing in the work of certain authors unbeknownst to them. Synthetic Lipo constitutes the principal mission of the Oulipo: it's a question of opening new possibilities previously unknown to authors. (Le Lionnais, 1961, qtd. in Lescure, 1986)

Synthetizing new kinds of constraints inevitably brought to putting them into use in experimental literary outcomes of the most varied genre. Sometimes the constraints were in the the vocabulary, as the lipogrammatic[7] 300-page novel *La Disparition* (1969) written by Georges Perec avoiding to ever use the letter *e*[8]. In other cases, the texts served as an inspiration for many future works, such as all the Choose-your-own-adventure-books based on the model of *Un Conte à votre façon* written by Raymond Queneau in 1967. This book applies algorithmic techniques to narrative, creating a story in which the reader moves according to the choice they are asked to made at the end of each page, choice that will indicate to them which is the next step in their personal path around the pages.

The entire idea of the group spurs from one of these experimental texts, now considered the "prototypical example of Oulipian potential". (Wardrip-Fruin & Monfort, 2003, 147) Oulipo co-founder Raymond Queneau's *Cent Mille Milliards de poèmes* is a sonnet machine book of 10 x 14 verses, capable of producing 10^{14} sonnets. The reader always sees the poem as a sonnet, but any of the verses can be selected to take the place of another one in the same position in any of the other poems to which it will fit in terms of rhyme scheme, as well as syntactically and metrically (Wardrip-Fruin & Monfort, 2003). This type of poetry can be defined as *exponential*, in fact, the number of poems of n verses one can obtain is given by the exponential function 10^n. (Berge, 1973)

Writing the postface of the first edition of Queneau's poem, Le Lionnais introduced the expression *combinatory literature* . In his essay *For a Potential Analysis of Combinatory Literature* (1973), the Oulipian author Claude Berge tries to define *combinatorics* relying on the concept of *configuration*:

7 The *lipogram* is a kind of constrained writing or word game consisting in writing paragraphs or longer works in which a particular letter or group of letters is avoided.

8 The letter *e* is the most common vowel in French language.

> One looks for a configuration each time one disposes a finite number of objects, and one wishes to dispose them according to certain constraints postulated in advance. (Berge, 1973, 177)

According to Berge then, combinatorics studies configurations, it attempts to demonstrate the existence of certain types of configurations, once found they are either listed or optimized[9].

Considering Queneau's poem as a combinatory work, Berge distinguishes three different currents within the Oulipo: the search for new structures, the research into "methods of automatic transformation of texts" (1973) and the *transposition* of concepts existing in different branches of mathematics into the realm of words; namely, geometry and Boolean algebra[10]. It would be, then, in this third current that combinatory literature is situated. Origins of combinatory literature can be traced back to Latin factorial[11] poetry in which "certain elements of the text may be permutated in all possible ways as the reader (or chance) sees fit; the meaning changes, but syntactic correctness is preserved" (Berge, 1973,179). *Composition n°1* , the novel whose pages can be read in any order, can be considered a modern example of factorial fiction.

Other forms of combinatory poetry are the already cited exponential novel and the even more elaborated Fibonaccian poems in which "with n elements, the number of poems one can engender is none other than Fibo-

9 "if this existence is no longer in doubt, it undertakes to count them (equalities or inequalities of counting), or to list them (*listing*), or to extract an *optimal* example from them (the problem of optimization. (Berge, 1973)

10 Boolean algebra is a kind of algebra defined on the set of variables 1 and 0, otherwise referred to as true and false. (Givant, Steven; Halmos, Paul, 2009)

11 One example of latin factorial poetry is the one that is composed using the *latin square,*a bidimensional mathemathical structure that serves a matrix for permutations among letters. A Latin square of order n is a square grid of $n \times n$ cells in which n different symbols appear and which satisfies the following conditions:

a) there is only one symbol per cell;

b) In every line and in every column each symbol appears only once.

A	B	C	D	E
B	C	E	A	D
C	E	D	B	A
D	A	B	E	C
E	D	A	C	B

naccian number".[12] (Berge, 1973, 180)

Although the works that actually succeed in following these complicated patterns are rare, the development of research of this kind, parallel to the development of computer technology, brought the Oulipians to realize that a whole new field of study opened, that of a computer-mediated textuality.

Employing computational tools, could in fact offer the possibility to rely on constraints to widen potential expression and enhance the reader's participation.

2.3 WRITING WITH A COMPUTER

In this section we will go through the different ways in which a computer can act as a tool to assist the writer, not only as a way to facilitate the writing process but as a *poetic* tool. The focus will be on the procedures that make of the computer a mean of artistic expression. In particular we will take into consideration texts that are created employing computer technology's expressive potential but do not necessarily require a computer to be read.

As we have seen, the Oulipo group was engaged in the study of combinatory procedures, that also benefited from the contact with the A.R.T.A literary project[13], the objective of which was "to establish the basis for a possible agreement between computer science and literary creation". (Fournel, 1981, 182)

Several experiments were carried out, regarding computer-aided reading, creation and both. As far as the creative process is concerned, the relation author-computer can take different shapes. Paul Fournel makes a classification of the possible types of relations, defining a first type as corresponding to the pattern Author - Computer - Work in which the computer

12 The typical Fibonaccian poem is a six line, 20 syllable poem with a syllable count by line of 1/1/2/3/5/8 - with as many syllables per line as the line's corresponding place in the Fibonacci sequence. The only restriction is that the syllable count follow the Fibonacci sequence. An example:

One,
Small,
Precise,
Poetic,
Spiraling mixture:
Maths plus poetry yelds the Fib.
(Pincus Gregory K. "GottaBook: The Fib" Retrieved 2006)

13 A.R.T.A: "Atélier de Recherches et Techniques Avancées", or "Workshop of Advanced Studies and Techniques" a group working at the Centre Pompidou. For a time, the Oulipo used A.R.T.A. equipment in their work on computer-aided literature. (Wardip-Fruin, Monfort, 2003)

is an integral part of the writing process and actively helps the author to elaborate the final text. (Fournel, 1981)

Computers have been programmed to decrypt messages, convert text to speech, parse and act upon human speech, generate fonts, and even design electronic circuits. There remains, however, much that computers cannot do and may never be able to do without a body. Despite such limitations the computer is an excellent extension of some areas of human cognition, such as sorting large lists, mathematical calculations, memory and retrieval, and error correction. If one combines those skills with human superiority in pattern recognition, adaptability, natural language processing, and the ability to distinguish irrelevant from relevant information, the computer and the human have a potentially powerful symbiotic relationship. (Pulizzi, 2008)

This collaboration could happen asking the machine to conduct all the complicated calculations that result in combinatory literature, or, as Oulipian writer Italo Calvino shows, the exact contrary. According to Calvino, the computer can provide an aid in combinatory literature when "the structures chosen by the author are relatively few in number, but the possible realizations are combinatorily exponential" (Calvino, 1981, 183) as far as the computer may realize a larger number of the potentiality than the human brain. On the other hand, computer aid can also take an anticombinatoric character "when among a large number of possibilities, the computer selects those few realizations compatible with certain constraints". (Calvino, 1981, 183)

He presents a study on the short story *The fire in the Cursed House* in which he proposes a list of characters, constraints and events to the computer, asking it to determine, progressively crossing the data, who may have done what. In this case, then, the author provides the computer with a set of data and of constraints and asks it to process it in order to receive it back re-elaborated.

The narrative takes the shape of a detective story in which the hero investigates to solve the mystery of several crimes happened in an abandoned house. The only hint he has is a note listing all the twelve crimes perpetrated in the house, crimes that, supposedly, feature as authors and victims the four inhabitants, all dead in the fire that almost destroyed the entire house. Apart from the mystery atmosphere, the situation is also characterized by a strong combinatory aspect as:

> Even assuming that each of these twelve actions had been accomplished by only one person to the prejudice of only one person, reconstructing the events is a difficult task: if the characters in question are four in number, they may represent, taken two by two, twelve different relations for each of twelve sorts of relations listed. The possible solutions, in consequence, are twelve to the twelfth power; that is, one must choose among solutions whose number is in the neighborhood of eight thousand eight hundred seventy-four billion two hundred ninety-six million six hundred sixty-two thousand two hundred fifty-six. (Calvino, 1981, 184)

Calvino explains that a machine can be programmed to create possible sequences crossing the data. Nevertheless, the crossings have to be methodic and progressive in order to obtain resulting selection that respect logic constraints. The calculation possibilities of the computer would then be used for an anticombinatoric aim, but would not, according to Calvino, replace "the creative act of the artist" (1981); on the contrary it would allow an increased freedom of creation, freedom from the combinatory search that would be done by a machine with much more data processing skills. Therefore, the computer makes calculations that actually have the power to influence the narrative structure, but is still very far from being able to do without the hand of the author.

Still, experiments like this open new debates on the role of the author in computer aided literature, and the possibility of programming a machine for literary creation that could completely do without the writer. It is this discourse that will be the centre point of the next section of this chapter.

Another aspect that is important to consider when talking about using computer as a poetic tool is the employment of computer as a mean to simulate randomness.

In *The Creative Mind: Myths and Mechanisms.* (1990) Margaret Boden gives a definition of randomness classifying it in three different meanings that concern its compatibility with creativity.

> We must distinguish these three senses, because they have different implications concerning determinism –

> which many people see as incompatible with creativity. The first two meanings are very closely related. 'Absolute' randomness (A-randomness, for short), is the total absence of any order or structure whatever within the domain concerned, whether this be a class of events or a set of numbers. (It is notoriously difficult to define A-randomness technically, but for our purposes this intuitive definition will do.) 'Explanatory' randomness (E-randomness) is the total lack, in principle, of any explanation or cause. […] 'Relative' randomness (R-randomness) is the lack of any order or structure relevant to some specific consideration. Poker-dice, for example, fall and tumble R-randomly with respect to both the knowledge and the wishes of the poker-players — as you may know only too well.

According to Boden, if an event is A/E-random, it must also be R-random. On the contrary an R-random event doesn't have to be A/E-random, since it may be strictly constrained in some terms other than the aspect by reference to which it is R-random. It is more difficult to state if all three types of randomness actually occur. There is no disagreement about whether R-randomness happens whereas, while Quantum physicists hold that some events are A/E-random, strict determinists believe that "A/E-randomness is like the unicorn: an intriguing concept that does not apply to anything in the real universe". (240)

According to this definition, the capacity of simulating randomness assumes a crucial role when discussing the possibility of programming computers as creative tools:

> A convincing computer model of creativity would need some capacity for making random associations and/or transformations. Its randomizing procedures might be A-random; for example, its instructions or associations might sometimes be chosen by reference to lists of random numbers. But they need not be: R-randomness would do. Indeed, some creative programs rely on random numbers at certain points, and genetic algorithms can produce order out of chaos. Moreover, some computer models spend

> their 'spare' time searching for analogies in a relatively unconstrained way. This computerized R-randomness could exist alongside more systematic (and somewhat more reliable) 'rules' for generating useful ideas. (Boden, 1990, 242)

Nevertheless the connection between randomness and creativity is the object of controversial debates. Randomness is not always seen as compatible with creativity. In the previous paragraphs, for example, we have analyzed ergodic works that based the creative process on constraints, seeking to exclude randomness and chance from the artistic production as "no good would be generated by pure, unbridled chance" (Berge, 2003). On the other hand, procedures like the ones experimented by some Dadaist and Surrealist poets used to completely rely on randomness as a creative tool. In Tristan Tzara's *Dada Manifesto on Feeble Love and Bitter Love* (1924) the recipe to create a Dadaist poem is presented:

> To make a Dadaist poem:
> Take a newspaper.
> Take a pair of scissors.
> Choose an article as long as you are planning to make your poem.
> Cut out the article.
> Then cut out each of the words that make up this article and put them in a bag.
> Shake it gently.
> Then take out the scraps one after the other in the order in which they left the bag.
> Copy conscientiously.
> The poem will be like you.
> And here you are a writer, infinitely original and endowed with a sensibility that is charming though beyond the understanding of the vulgar. (Tzara, 1924)

Surrealist artists used to adopt techniques that meant to emphasize chance and spontaneity as a mean to achieve a *sublime point* or the *point sublime*, the core of surrealist theory. The point with which some part of the mind communicates directly and in which it would be possible to unlock the limitless within the human mind itself, effecting an essentially spiritual liberation. In these terms, then, surrealism's aim can be said to be the development of a consciousness of this communication. (Gullette, 1979) Different techniques were developed favouring automation and spontaneity in the creative process, for example, mystic meaning were given to the *trouvaille* or *the found object* able to create a link, a channel of communication between everyday reality and the superior, sublime reality. A surrealist will sometimes find an object which seizes his attention with its uniqueness or with the uniqueness or unusualness of its situation or context – from which the function of the object, if man-made, would be a puzzle; or it might be a rock or a piece of wood bearing suggestive markings; or anything extraordinary or coincidental. Such objects would be incorporated into the surrealists' sculptures, montages or collages. (Gullette, 1979) Techniques of *automatic drawing* were experimented, in which, the hand was allowed to move *randomly* across the paper, hence the drawing produced might be attributed in part to the subconscious and might reveal something of the psyche, which would otherwise be repressed. In poetry, words could be chosen according to a technique inspired from a children's game and known as *the exquisite corpse*. This involved several people consecutively writing entire lines or parts of a sentence without being able to see what others have written. The name comes from the first result of this method (in 1925): *Le cadavre exquis boira le vin nouveau* [14]. (Gullette, 1979)

In 1978 Beat writer William Burroughs describes a method ideated in 1959 by British-Canadian painter, writer and regular collaborator of his, Brion Gysin. The so-called *cut-up method* intended to bring to writers the method of collage, that at the time had been used by painters for already fifty years. (Carvalhais, 2010)

> The method is simple. Here is one way to do it. Take a page. Like this page. Now cut down the middle and cross the middle. You have four sections: 1 2 3 4 . . . one two three four. Now rearrange the sections placing section four

14 *the exquisite corpse will drink the new wine*

> with section one and section two with section three. And you have a new page. Sometimes it says much the same thing. Sometimes something quite different — cutting up political speeches is an interesting exercise — in any case you will find that it says something and something quite definite. Take any poet or writer you fancy. Here, say, or poems you have read over many times. The words have lost meaning and life through years of repetition. Now take the poem and type out selected passages. Fill a page with excerpts. Now cut the page. You have a new poem. As many poems as you like. As many Shakespeare Rimbaud poems as you like. (Burroughs, 1978,90)

Although similar to Tzara's method, the *cut-up method* leaves more freedom to the writer who can select, revise and rewrite and who is not instructed to *copy conscientiously* but can instead use scissors and glue: "Cut-ups could be applied to fields other than writing, in science, games and military strategy, bringing chance, accidents and serendipity to the world." (Carvalhais, 2010, 120)

If Tzara was expelled by the Surrealist movement because he affirmed that *poetry is for everyone*, depriving the artist of their mystical function of unlocking the limitless power of human mind and building a connection with the sublime and *sur-real*; then Burroughs and Gysin took this assumption even further stating that "*cut-ups* are for everyone". (Wardrip-Fruin & Monfort, 2003, 89)

Experiences like these are important within the study of the computer's usage as a poetic tool. Procedures that experiment automation in the creative process or randomness as an instrument in artistic production focus on the process that leads to the final artistic product, making it explicit. The process becomes the centre of study and experimentation, acquiring equal artistic relevance as the results. Moreover, the process is explained, it is made available and can be repeated following the detailed instructions given, similarly to what happens with algorithms, programming and coding.

Even though it is possible to draw a connection between methods such as the *cut-up* and computer tools such as cut-copy-paste editing, the methods cited here were not conceived to include computer technology, never-

theless they served as strong inspiration for further experiences in the field of Generative Art and Electronic Literature. Jim Andrews openly states that his work *On Lionel Kearns* (2004), based on a randomizing algorithm, was directly inspired by Burroughs's concept of *cut-up*. Andrews sets and resets numerous poems of Canadian writer Lionel Kearns in a presentation that explores many of Kearns's ideas through his own digital designs. Digitized versions of films by Kearns, texts to assemble, interactive segments, writing by Kearns about his life and work, and a bibliography are included. (Hayles, 2008)

The author cites as theoretical precedent of his work Burroughs's idea that "randomization is a way to break the hold of the viral word and liberate resistances latent in language by freeing it from linear syntax and coherent narrative" (Hayles, 2008)

2.4 THE PROBLEM OF AUTHORSHIP

In 1967, Roland Barthes published a critical essay proclaiming *The death of the author*. Reshaping the role of the author in literature, he argues that writing destroys every individual voice and point of origin. This is because it occurs within a functional process which is the practice of signification itself. The real origin of writing, then, is not the author, but language. The writer, consequently, can be compared to a craftsperson, being particularly skilled in using a certain code. The authors lose the central, genius-like character they used to have in romanticism[15], their work is no longer analyzed in order to find out what they were willing to say, what distinguishing feature of their personality is mirrored in the text and therefore looking for hints in their biography and mindset. Rather, according to Barthes, literature sprouts when the author ceases to exist and becomes the mere telling voice:

> Literature is that neuter, that composite, that oblique into which every subject escapes, the tap where all identity is lost, beginning with the very identity of the body that writes. Probably this has always been the case: once an action is recounted, for intransitive ends, and no longer in order to act directly upon reality […] this disjunction occurs,

15 During the Romantic period it was diffused for writers to create a fictional hero, linked for several aspects to their own personality. The most emblematic example is Lord Byron. The most flamboyant and notorious of the major Romantics, George Gordon, Lord Byron, was likewise the most fashionable poet of the day. He created an immensely popular Romantic hero—defiant, melancholy, haunted by secret guilt—for which, to many, he seemed the model.

> the voice loses its origin, the author enters his own death, writing begins. (Barthes, 1967,2)

According to this viewpoint the reader holds more responsibility to the text than the author. The complexity of different connotations and experiences that come from the author into the text are flattened when it arrives to the reader. The *death of the author* creates freedom for the reader to interpret the text. The reader can recreate the text through connecting to its meanings as they appear in different contexts, the text becomes the result of their interpretation, of their biographical story and mindset. Consequently, as every reader is different from the other a text cannot have a single meaning, but rather, is composed of multiple systems through which it is constructed. Literature does not represent something real, since what it refers to is not really there, therefore there is not a *right* or *wrong* interpretation of literature. For Barthes, it works by playing on the multiple systems of language-use and their ability to be written and read in different ways.

Michel Foucault also puts the author's persona into a new perspective, similarly to Barthes he focuses on literature as the text itself, freed from the necessity to be expression of the author's more or less implicit intentions:

> This means that it is an interplay of signs arranged less according to its signified content than according to the very nature of the signifier. Writing unfolds like a game [jeu] that invariably goes beyond its own rules and transgresses its limits. In writing, the point is not to manifest or exalt the act of writing, nor is it to pin a subject within language; it is, rather, a question of creating a space into which the writing subject constantly disappears. (Foucault, 1969)

According to Foucault, the author loses importance in favour of the act of writing itself. Consequently, a piece of literature has to be read and analyzed not referring to its author, or the historic, social and cultural context, but taking into consideration only the text itself.

Losing centrality for the author also means opening the debate on death, not as a metaphor, as the death of the author's literary persona, but death as the inevitable conclusion of life, and its antithetical: immortality.

Foucault approaches the relation between writing and death referring to the figure of the hero in Greek tragedy:

> This link subverts an old tradition exemplified by the Greek epic, which was intended to perpetuate the immortality of the hero: if he was willing to die young, it was so that his life, consecrated and magnified by death, might pass into immortality; the narrative then redeemed this accepted death. (1969)

In another way, all along literary history, and especially during romanticism, writing was seen as a way to achieve immortal life. The writer would die but their work would be transmitted from generation to generation and make them immortal. Emblematic examples of this recurrent theme may be found in Renaissance sonnets Edmund Spenser's *Amoretti LXXV* (1595)[16] and William Shakespeare's *Sonnet LX* (1609)[17] or in Ugo Foscolo's early Romantic *Carme Dei Sepolcri* (1807)[18].

Also, narrative can be a mean not to transcend death, but to elude it and / or postpone it, as it happens in the traditional Arabian collection of stories, *The Thousand and One Nights*. Quoting Foucault again:

> The motivation, as well as the theme and the pretext of Arabian narratives – such as The Thousand and One Nights – was also the eluding of death: one spoke, telling stories into the early morning, in order to forestall death, to postpone the day of reckoning that would silence the narrator. Scheherazade's narrative is an effort, renewed each night, to keep death outside the circle of life. (1969)

Along history then, literature would pass from being the mean for the

16 "Not so, (quod I) let baser things devize/ to dy in dust, but you shall live by fame:/ my verse your vertues rare shall eternize,/ and in the hevens wryte your glorious name./ Where whenas death shall all the world subdew,/ our love shall live, and later life renew." This quotation shows the theme of contrast between our mortality as human individuals and the perdurability of poetry which is the core of the entire composition.

17 "Not marble, nor the gilded monuments/ Of princes shall outlive this powerful rhyme;/ But you shall shine more bright in these contents/ Than unswept stone besmeared with sluttish time." In the opening lines of the sonnet the power of poetry to immortalize is compared to that of marble which, as all material things will inevitably decay.

18 "Il sacro vate,/ placando quelle afflitte alme col canto,/ i prenci argivi eternerà per quante/ abbraccia terre il gran padre Oceàno." (the holy poet/ placating those afflicted souls with his chant/the Argean princes will eternize/ along all of the lands that the great father Ocean hugs) In the closing part of the Carme the poet affirms that the memory of the glorious past is in the hands of poetry, as time will destroy any material evidence.

author to avoid death or even to achieve immortality to being the actual circumstance of their death as literary persona. In the last few decades other elements have appeared to threaten the established role the author used to have in the past. New media arts and technologies introduced concepts such as automatic writing, interactivity, collaborative authorship and mass distribution that contributed to the debate on the problem of authorship in contemporary artistic expressions:

> The logic of the art world and the logic of new media are exact opposites. The first is based on the romantic idea of authorship which assumes a single author, the notion of a one-of-a-kind art object, and the control over the distribution of such objects which takes place through a set of exclusive places: galleries, museums, auctions. The second privileges the existence of potentially numerous copies; infinitely many different states of the same work; author-user symbiosis; the collective; collaborative authorship; and network distribution. (Manovich, 2003)

This quotation from Lev Manovich's *New Media from Borges to HTML* (2003), refers to the resistance of new media arts to establish themselves as a mass phenomenon in the 1990s and considers art as commonly thought of, as antithetic to new media as far as the role of the author is concerned. The nature of new media products characterized by the availability for everyone with access to the necessary tools regardless of time, place or choice on the part of the author is, according to Manovich, incompatible with the traditional concept of authorship. The progressive spreading of new media art expressions would then mean a rethinking of the figure of the author, the inevitable *death* of the author as traditionally considered.

Calvino also questions the possible vanishing of the figure of the author. In his lecture *Cybernetics and Ghosts*, delivered in 1967 he recognizes the growing importance of information theory and mathematics over a number of research domains, including language and literature:

> And linguists, too, have begun to talk in terms of codes and messages, to attempt to establish the entropy of language on all levels, including that of literature. Mankind

> is beginning to understand how to dismantle and reassemble the most complex and unpredictable of all its machines: language. (Calvino, 1986, 8)

Calvino is referring to schools and currents that, similarly to the Oulipo group, applied concepts from scientific domains such as mathematics and logic to the research on literature and language. Examples can be found in the French school of structural semantics led by Algirdas Julien Greimas, in the usage of transformational mathematical patterns by American linguistic school headed by Noam Chomsky, that led to the exploration of the deep structure of language lying at the roots of the logical processes (9), and in the reborn Russian Formalist school that, in the1960s was "employing the results of cybernetic research and structural semiology for the analysis of literature" (9).

Calvino goes even further, getting to raise the question whether there could truly be a machine to replace the poet and author.

> And I am not now thinking of a machine capable merely of "assembly-line" literary production, which would already be mechanical in itself. I am thinking of a writing machine that would bring to the page all those things that we are accustomed to consider as the most jealously guarded attributes of our psychological life, of our daily experience, our unpredictable changes of mood and inner elations, despairs and moments of illumination. (10)

When defining what style would the hypothetical machine feature, classicism seems like the most reliable test. The ability to produce perfect metrical structures or novels that respect all of the formal rules, would be the primary metre of evaluation (10). Nevertheless, in addition to all of these characteristics, the poetic-electronic machine would automatically develop the ability to create avant-garde work, deriving from the all human innate need to producing disorder, from a given point onwards.

> The true literature machine will be the one that itself feels the need to produce disorder, as a reaction against its preceding production of order: a machine that will pro-

> duce avant-garde work to free its circuits when they are chocked by too long a production of classicism. (11)

If the machine is programmed with the ability of learning, of changing its own programs and developing new sensibilities, then, exactly like it occurs to writers, it would begin to feel unsatisfied with the set of schemes it follows and look for other and new ways of writing.

Although Calvino assesses the hypothetical possibility of such a machine to be designed, he also says that probably, if possible to be built, it would be so complicated that it wouldn't be worth it (10). In his essay on anticombinatorics, when analyzing the actual possibility of a machine such as the computer, to create literature using an algorithm, he comes to the conclusion that even the most complicated set of calculations cannot create literature:

> The aid of a computer, far from replacing the creative act of the artist, permits the latter rather to liberate himself from the slavery of combinatory search, allowing him also the best chance of concentrating on this "clinamen" which, alone can make of a text a true work of art. (1981)

The clinamen is the deviation, the error in the system. In interactive systems, in new media, the most important clinamen can be that which is introduced from outside of the system. (Monfort, Wardrip-Fruin, 2003, 148) It is this necessity of disorder, necessity of a clinamen, that the perfect literature machine should include in order to produce art and not only a text that respects all the rules and metrics of a specific literary style. While this is in itself a bold statement to make, in the second part of his lecture, Calvino takes this even a step further by provocatively arguing that the writer has in fact always been a machine which allows him to make a connection to the electronic brain (Doove, 2014,151). In the writer's attempt to arrive at the written page there is already a dissolving of the "I" of the author: "The so-called personality of the writer exists within the very act of writing: it is the product and the instrument of the writing process" (Calvino, 1986,13).

Seeing the author as a machine, Calvino arrives to a conclusion similar to Barthes's, moving the focus of attention from the figure of the author to the work itself and to the reader:

> The work will continue to be born, to be judged, to be destroyed or constantly renewed on contact with the eye of the reader. What will vanish is the figure of the author, that personage to whom we persist in attributing functions that do not belong to him, the author as an exhibitor of his own soul in the permanent Exhibition of Souls, the author as the exploiter of sensory and interpretive organs more receptive than the average... The author: that anachronistic personage, the bearer of the message, the director of consciences, the giver of lectures to cultural bodies. (14)

The machine Calvino conceived would be actually creative, it would not only assist the writer in the writing process not even only collaborate with the author in the creative process, it would be able to create an artifact by itself.

In 2001 Selmer, Bello and Ferrucci proposed a test to assess whether a machine can be considered creative. The test employs a restrictive definition of creativity, one that suggests that "the notion of creativity requires autonomy" (Selmer, Bello, & Ferrucci, 2001,25). The aim is to find evidence of creativity in those cases in which the machine creates a product that cannot be explained by the creator of the machine, when this product stands to the machine as an artifact stands to its creator. Brigsjord, Bello and Ferrucci propose the following definition:

Artificial agent *A*, designed by *H*, passes *LT* if and only if:

- *A* outputs *o*;
- A's outputting o is not the result of a fluke hardware error, but rather the result of processes A can repeat;
- *H* (or someone who knows what *H* knows, and has *H*'s resources) cannot explain how *A* produced *o*. (Selmer, Bello, & Ferrucci, 2001,8)

Although no machine has, up to now, passed the Lovelace Test, the fact that such a test exists shows how the completely hypothetical *Literature Machine* conceived by Calvino, ceased to be completely hypothetical when scholars started to investigate in the field of Computer Intelligence.

The eventual introduction of machine intelligence into works of literature opens many possible areas of cooperation and collaboration between the user, computer, and author in the creation and generation of interactive narratives. (Pulizzi, 2008)

Artificial Intelligence began with Alan Turing's 1951 article on computability and human intelligence, in which he designs a system to assert whether a machine was indeed intelligent. *The Imitation Game* proposed that a human interrogator, the *judge*, would communicate with two agents, one of them human, the other a machine, by means of a text-based interface. The judge's job is to decide which of the contestants is human, and which the machine. Turing proposed that, if a judge were less than 50% accurate, that is, if a judge is as likely to pick either human or computer, then the computer must be a passable simulation of a human being and hence, intelligent. The game was later modified by Turing himself so that there is only one contestant, and the judge's job is not to choose between two contestants, but simply to decide whether the single contestant is human or machine. Anyway, it was not until the work of Allen Newell and Herbert Simon at RAND[19] in the middle 1950s, that researchers saw the digital computer not merely as a calculator but as a device able to represent the real world through physical symbol systems in its circuitry.

In his paper *Machine Intelligence and Electronic Literature* (2008), James J. Pulizzi defines Machine Intelligence as a subdomain of the field of Artificial Intelligence:

> Machine intelligence seeks to produce machines—a term used broadly to refer to computers or other relevant hardware—capable of exhibiting intelligent behavior. (…) By not attempting to equal human cognitive abilities in all domains, machine intelligence presupposes a complementary relationship between the human and the machine.(Pulizzi, 2008)

Author and machine could then collaborate on an equal level on the creation of a piece of literature. Katherine Hayles descrbes Generative Lit-

19 RAND Corporation (Research ANd Development) is a nonprofit global policy think tank originally formed by Douglas Aircraft Company to offer research and analysis to the United States Armed Forces. The organization has expanded to work with other governments, private foundations, international organizations, and commercial organizations on a host of non-defense issues. RAND aims for interdisciplinary and quantitative problem solving via translating theoretical concepts from formal economics and the physical sciences into novel applications in other areas, that is, via applied science and operations research.

erature as one of the most innovative categories of electronic literature and describes it as the procedure in which "an algorithm is used either to generate texts according to a randomized scheme or to scramble and rearrange preexisting texts". (2008, 18)

Noah Wardrip-Fruin created what he calls *textual instruments*[20] that begin with news stories and then employ the *n*-gram technique by Claude Shannon[21] to find similar strings in the source and target documents, using them as bridges to splice together the two texts. (Hayles, 2008,19)

Another way for the *human author* to use the computer as a valuable collaboration is through the use of "plot controllers capable of making intelligent decisions about narrative syntax on the basis of aesthetic values". (Murray, 1998,200) What Murray recognizes as a common challenge of similar experiments is "giving the computer enough knowledge of the story elements". (201)

Michael Lebowitz proposes a technique to avoid the arduous task of teaching the computer to understand the world well enough to make such aesthetic judgments based on coding every specific story elements in terms of their dramatic function. (Murray, 1998,201) His experimental program UNIVERSE is a system for extended stories generation, focused on the ex-

20 Wardruip- Fruin use this definition for his works *Regime Change* and *News Reader.* Textual instruments make text *playable* in a new way. At first, as one encounters their workings, they are toys for exploring language — more flexible than link-node hypertext, more responsive than batch-mode natural language generators. With growing experience, these instruments can also become tools for textual performance.

Regime Change begins with a news article from April 2003, following the bombardment that began the U.S. invasion of Iraq. George W. Bush cites "eyewitness" intelligence that Saddam Hussein was assassinated by targeted U.S. bombing, and clings to the contention that the Iraqi president was hiding "weapons of mass destruction." Playing *Regime Change* brings forth texts generated from a document that records a different U.S. attitude toward presidential assassination and eyewitness intelligence — the report of the Warren Commission. *News Reader* is a software for reading and playing the network news environment. It initially offers the current "top stories" from Yahoo! News — which are always drawn from mainstream sources. Playing these stories brings forth texts generated from alternative press stories, portions of which are (through interaction) introduced into the starting texts, gradually altering them. *News Reader* is an artwork designed for daily use, providing an at times humorous, at times disturbing experience of our news and the chains of language that run through it. These two instruments operate using the statistics of n-grams, a technique used for textual games for more than 50 years (the report of the first game appearing in Claude Shannon's 1948 *A Mathematical Theory of Communication*). These n-grams are chains of words, and these instruments use shared chains between documents as "bridges," allowing movement from the text of one document into a body of text created from others (and back). By using this approach to make text playable, by taking the logic of word chains to defamiliarizing and sometimes humorous extremes, *Regime Change* and *News Reader* provide ways to perform William Burroughs's injunction to *cut up* — to break the chains of conceptual association, the constant association of words in the speech we hear and echo to others on a daily basis. (Durand, Moss, Froehlich, 2004)

21 The Shannon switching game is a combinatorial game that is traditionally played by one robber and one cop on a graph with a specified starting and ending vertex. The robber and cop alternate turns and either player can go first. The robber attempts to trace a path from the starting vertex to the ending vertex by tracing one unmarked edge per turn. The cop attempts to prevent a path from the starting vertex to the ending vertex by deleting one unmarked edge per turn. The robber wins the game if the robber creates a path from the starting vertex to the ending vertex. The cop wins if all edges have been traced or deleted, but the robber was unable to create a path from the starting vertex to the ending vertex. This game has applications in computer science and social network theory. (Ramnani, 2013)

ample of television soap operas programmed to generate consistent[22] and coherent[23] story-telling universes.

As Lebowitz explains, extended story generation is a challenge theme for Artificial Intelligence:

> Besides the obvious natural language processing issues, telling extended stories involves issues in knowledge representation (the information needed about people and events to tell interesting, believable stories), knowledge state assessment (what the reader knows versus what the author knows versus what the characters know), organization and access of information (keeping track of characters, their histories, and all sorts of ongoing plots), planning complex interaction among plots, and author(the program, in the AI case) intent. (Lebowitz, 1983,2)

The system is based on the creation of *person frames*, that collect all the necessary information of every character, including stereotypes (occupation, social group, personal background), relationships with other characters, typical goals and past events. (Lebowitz, 1983,6-7). The automated author is assigned goals and let the system look for fragments in the *person frames* that will achieve these goals. (Murray, 1997)

```
Name: JESSICA DONADIO (&PER7)
Born in: 1918
Marriages:
   DOUGLAS DAVIDSON [&PER0] [1951/1959]
      - - MARK DAVIDSON [&PER8]
      - - RENE DAVIDSON ROGERS [&PER9]
   IVAN SCHAAD [&PER14] [1959/1967]
IPRs:
   EX-SPOUSE       DOUGLAS DAVIDSON [&PER0]      -5/-5//4/4//0/0//4/4
   DIV-WOM         8/4//4/4//6/3// /             MARK DAVIDSON [&PER8]
   DIV-WOM         8/4//4/4//6/3// /             RENE DAVIDSON ROGERS [&PER9]
   EX-SPOUSE       IVAN SCHAAD [&PER14]          -5/-5//4/4//0/0//4/4
                   BRUCE SMITH [&PER45]           /-4// / //6/-4// /
History: REVENGE/1984 [&PL7]
Stereotypes: WASPBUSE PARTY-GOER ECONANIAC
Trait modifiers:  (PHYS-ATT -1) (AGE A)
Overall description:
WEALTH          6
PROMISCUITY     7
COMPETENCE      7
WICKEDNESS      0
SELF-CONF       8
GUILE           7
WOODINESS       5
PHYS-ATT        5
INTELLIGENCE    4
GOALS           (BECOME-FAMOUS MEET-FAMOUS-PEOPLE ASSOCIATE-RIGHT
                FIND-HAPPINESS)
AGE             A
SEX             F
```

Fig 3: A sample UNIVERSE character (Lebowitz, 1983)

22 "A story is *consistent* if properties and events of the story world (including properties of characters) do not contain internal contradictions". (Lebowitz, 1983,3)

23 "*Coherence* involves the idea that events should be logically derivable, at least in retrospect, from the information available to the reader. While it is neither necessary nor desirable to provide the reader with enough information to actively predict every event that will occur in a story, the events should make sense when they occur. Most notably, actions should be based on the personalities and backgrounds of the characters involved" (Lebowitz, 1983,3)

The picture shows a typical *story-telling universe*: the need for this character arose when it was decided that character *Douglas Davidson* had to get married. They had two children and were subsequently divorced. Jessica later had a second marriage which also ended in divorce. (Lebowitz, 1983,17)

Despite being able to maximizing plot fragments in order to create cohesive and coherent story sequences, UNIVERSE is a limited model, since it does not provide for a plot that comes to a conclusion or for participatory narrative. (Murray, 1997,202)

On the other hand, in the genre of *Interactive Fiction*, the intelligent machine can be a partner with the human to the creation of a piece of electronic literature. Interactive Fiction constructs a simulated world in which the reader, navigates and explores through an entirely text-based interface. A parser interprets simple natural language inputs from the reader, usually in the form *verb noun* and then passes the encoded information to the program that determines how the action should advance. (Pulizzi, 2008)

Whom the Telling Changed (2005) is an interactive short story, by Aaron A. Reed. Blending aspects of Interactive fiction as well as the links and nodes structure typical of hypertext narrative, it explores what storytelling meant to the earliest civilizations and what it will mean in the 21st century

:

Fig: 4 Whom the Telling Changed, *opening screen* (http://www.aaronareed.net/)

> The people had always gathered on moonless nights to hear the stories, since the time of their ancestors' ancestors. The heat of the fire and the glow in the storyteller's eyes made the past present, and the path to the future clear. The power in the telling was immense, subtle, divine. What man would dare subvert it? (Reed, 2005)

The narrative places the reader in the role of a healer from the time of the Gilgamesh epic whose village may soon go to war with newcomers to the valley. The reader has to listen to the story being recounted during an annual ritual and try to persuade the crowd of fellow villagers to seek peace by asking questions or emphasizing specific themes in the inner story. The adversary has the opposite goal. As the reader traverses the plot, they accumulate a history based on decisions both important and trivial that ultimately impact the outcome and significance of the frame story. Hypertext-like keywords allow the reader to raise points in the interior story, persuading the crowd and other characters to corresponding points of view, while a more robust interactive fiction parser allows the player to interact extensively with the frame story. (Hayles, 2006)

The program has been designed so that it is difficult for the reader to predict the conclusion of the story or even to say what are the consequences of their actions on its progression. This indeterminacy is due to the fact that the program too is an interactor in the narrative and has a decisional role on how the story will proceed. (Pulizzi, 2008)

It is legitimate to wonder if and to what amount authorship is shared among writer, reader, programmer and the computer. Nevertheless, as far as the dichotomy between human and computer authorship is concerned, the two entities should not be considered as competitors, rather, as enhancing one another and existing "in a dynamic relationship". (Pulizzi, 2008)

In hypertext literature author and reader are, by some, considered as collaborators, the reader, in fact creates a personal path in the narrative according to the links they choose to follow. The author doesn't have full control on the text, as a result, there won't be a unique narrative, rather a different one for every reader and for every reader's different reading.

> Hypertext […] changes the relationship between writer and reader. The reader becomes a collaborator, con-

> structing and reconstructing the text, choosing his own path through it. (Balestri, 1988)

On her study on the possibilities of hypertext fiction *The End of Books - or Books Without End* (2000), Jane Yellowlees Douglas argues that authorship in hypertext "can be kept more omnipotent and omnipresent than in print (and perhaps even in life), embodied as ghosts in the machine, authors of […] the *intentional network*." (133) Douglas names *intentional network* the variety of ways readers might interact with the text, ways that she considers influenced by the intention of the author, similarly to the way an author of traditional fiction manages to indirectly influence the reader's judgement on a character or a situation[24]:

> In print fiction a text is all surface. Intention there can be visibly embodied in all the puns, twists, and spins an author can wreak on literary conventions [..]. In hypertext fiction, the author both tells a story and designs an experience that unfolds in time—not the fixed and immutable narrative a writer might create in print, but a series of potential interactions that span both time and space. (Douglas, 2000,134)

The intentional network is then made of all the structures, conceived by the author that either aid or restrict the navigation shaping the reader's experience and determining, or at least influencing what they read and in what order they read it.

> Providing me with paths to follow or words to choose, enabling me to view certain choices and not others. If I am in hot pursuit of the answer to a question, confirmation of a hunch, or the opportunity to end my reading, I need to be at least as concerned with interpreting the structural details and nuances of the hypertext as I do its content. (134)

24 Douglas uses the example of Crime and Punishment (1866) because of the way the author, Dostoyevsky succeeds in his attempt to slowly having the reader empathize with Raskolnikov, the main character, subverting their initial hatred and instinctive condemnation of his act. A similar procedure is used by Tolstoy in The Kreutzer Sonata (1889), where, through the words of the first person narrator, he artfully convinces the reader that a murder that would seem driven by the most fool jealousy, is, at the end, understandable and somehow justifiable.

However the intention of the author in analog media, hypertext intentional network can be manifested by more or less explicit structures, the presence of such structures builds in the reader the awareness of the existence of an author's will that make them difficult to be ignored and less luckily for the reader to traverse the text without paying attention to them.

A similar perspective is given by Murray with the concept of *Procedural Authorship*, describing the way authors in digital literature become builders of a whole set of narrative paths and possibilities open for the interactor to choose. They give the tools and the instructions to the interactor and a whole set of possibilities among which they are free to choose:

> Authorship in electronic media is procedural. Procedural authorship means writing the rules by which the text appear as well as writing the texts themselves. It means writing the rules for the interactor's involvement, that is, the conditions under which things will happen in response to the participant's actions. It means establishing the properties of the objects in the virtual world and the formulas for how they will relate to one another. The procedural actor creates not just a set of scenes but a world of narrative possibilities. (1999, 153)

According to Murray the participatory aspect that puts readers in the condition of playing an active role in the narrative shaping their reading experience, doesn't affect the author's role. Rather, the reader's power of influence on their experience can be defined as a derivative authorship that has to be distinguished from the originating authorship of the whole system that the reader navigates. The readers are not authors of the digital narrative, the power they can exert over their experience, has not do with authorship but with agency. (153) The point of focus should then move to how to put the author in the conditions to fully exploit the characteristic properties of digital environments and their expressive potentialities, including the participatory aspect. In Murray's view, in digital media, authorship has to be rethought in order to allow a procedural approach.

> We would have to find some way to allow them [authors] to write procedurally; to anticipate all the twists of the ka-

> leidoscope, all the actions of the interactor; and to specify not just the events of the plot but also the rules by which those events would occur. (185)

Given the nonlinear order in which the stories are read in digital media, writers would need to structure a coherent story as a multiform plot, open to the collaborative participation of the reader. In procedural authorship, the author is responsible for all of the story structure, all of the possible paths the reader can follow and the choices they may make. This is not a very different procedure from that used by ancient oral storytellers who used to compose stories anew for each recitation. Stories didn't have a single canonical version, their plots were multiform and they had several ways to be told and to be listened to. As classicist Alfred Lord describes in his 1960 book *The Singer of Tales*, they were structured in a set of formulas "starting at the level of the phrase and moving through the organization of the story as a whole". (Murray, 1998, 188) Lord presents a whole repertoire of formulaic ways to describe people, events, things and places that the bard could freely rearrange and include in the narrative through a substitution system. On an upper level, plots are also patterned following specific themes: "generic narrative unit that can be fit into multiple narratives, a unit such as the departure of a hero, the catalog of ships, the dressing of a hero for battle, the boast of a hero before battle, and the death of a hero". (Lord, 1960, qtd in Murray, 1998, 191) Themes would work as units of segmentation, points of reference to help the bard remember the plot.

We can then say that the bardic system is organized so that a story is transmitted from teller to teller, changing characteristics every time it is told but conserving the underlying patterns that the bards can adapt to every different performance. According to Murray the bardic system should serve as a model of what could be achieved in cyberspace through procedural authorship: the creation of a whole world and set of structure by the author who then leaves each reader free to navigate a multiform plot and have their own ever different experience at each reading.

2.5 CONCLUSION

Starting with analyzing works of ergodic literature we have noticed how one of the most important characteristics in such works, those of the Oulipo group for example, is the use of constraints as a tool of literary creation as well as the adaptation of concepts from mathematics, logic or statistics to writing. We can say that such procedures opened the way for computer science to be considered as a tool for literary creation, highlighting the importance of writing as a process. With the improvements in computer technology, these procedures lead to conceiving the possibility of completely automated writing, thus threatening the traditional figure of the author. The result is a rethinking of authorship, far from the romantic idea of it, the author becomes the conceiver of an experience for the reader rather than of a product that mirrors himself.

CHAPTER III

THE MEDIUM

3.1 INTRODUCTION

In this chapter we will take into consideration the importance of the medium in the production of nonlinear narratives. In particular we will focus on how the specific properties of digital environments and the tools they offer influence the way narratives are written and read.

Starting from Manovich's listing of the principles of digital media and Murray's definition of the properties that make them a tool for literary creation, we will then question whether digital media are or will ever become *transparent*.

Afterwards we will analyze the way digital media are used for writing and organizing information, taking into consideration the definition of electronic literature; hypertext, its conceptual origins, structure, characteristics and employment in fictions such as Michael Joyce's *Afternoon, A Story* (1987) and *Twelve Blue* (1992). We will also analyze the dynamics of hypertext's rhetoric of aporia and epiphany (Aarseth, 1997) and its implication with the roles of author and reader.

3.2 PROPERTIES OF DIGITAL MEDIA

As we have seen, nonlinear narratives have been existing since a long time before the invention of the computer, when it became clear that a new textual technology had arrived, potentially more flexible and powerful than any other preceding medium.

While in traditional literature all the procedures challenging the reader to play and interact with the medium happened on a metaphorical level, in digital literature the medium becomes an integral part of the literary product. Let's then see what are the characteristics of digital media, and which, among them can play a role in storytelling and how.

In *The Language of New Media* (2001) Lev Manovich listed the set of principles that characterize a product of new media. The first principle he distinguishes is *Numerical Representation*: "All new media objects, whether created from scratch on computers or converted from analog media sources, are composed of digital code; they are numerical representations" (2001, 27). Consequently, every media object can be mathematically described and is programmable, that is to say "subject to algorithmic manipulation"(2001, 27).

New media objects also present a *modular* structure, as they can be represented as "collections of discrete samples" (30). Self-sufficient modules of code, for example can be assembled into larger programs, remaining, independent and individually editable.

Numerical Representation and *Modularity* allow for a certain extent of *Automation* involved in media interaction, creation and access ranging from more basic forms of automation used, for instance, in image editing or writing softwares to the research led in the realm of Artificial Intelligence.

Another consequence of the first two principles is *variability*: a new media object, in fact "can exist in different, potentially infinite versions."[25](36) This principle is closely linked to the fifth: *Transcoding* which relates to the translation of a digital object from one format to another, within a computer system and also to the tendency of new media to computerize aspects of nondigital organization. (46)

If the principles described by Manovich relate to any new media

25 Manovich distinguishes six cases of variability:
Media elements stored in a media database
The creation of different interfaces from the same data
Use of information of the user by a computer program to customize the media composition
Branching-type interactivity
Hypermedia
Automatic periodic updates
Scalability (different versions of the same media object are generated at various sizes) (Manovich, 2001, 37-38)

object, in her *Hamlet on the Holodeck: The Future of Narrative in Cyberspace* (1997), Murray recognizes four essential properties of digital environments as means for literary creation.

First of all, digital environments are *procedural*, they operate following instructions in the form of algorithms. Computer scientist Joseph Weizenbaum "applied procedural thinking to the behavior of a psychotherapist in a clinical interview". (Murray, 1998,72) to create, in 1966, ELIZA[26], the first entirely digital character, a virtual therapist, able to simulate a credible conversation with a patient, "It is the cleverness of Wizenbaum's rules that creates the illusion that Eliza understands what is said to her and that induces the user to continue the conversation". (Murray, 1997, 72) The fact that thousands of people took the program seriously depends on the fact that Weizenbaum formulated extremely precise rules that are carefully based on therapists' behaviors while listening to their patients. (Murray, 1997, 72) The result, in a way, is that of mocking some rigid psychotherapeutic methodology, so rigid that a computer can be programmed to mimic it successfully.

> The lesson of ELIZA is that the computer can be a compelling medium for storytelling if we can write rules for it that are recognizable as an interpretation of the world. The challenge of the future is how to make such rule writing as available to writers as musical notation is to composers. (Murray, 1997, 73-74)

The experiment of ELIZA is also related to what Murray recognizes as the second propriety of digital environments: their *participatory* aspect. ELIZA functions following specific rules, nevertheless its behavior is also user-induced. The reason of its appeal is that it is responsive to the user's input.

Between 1977 and 1979 researchers at the MIT Laboratory of Computer Science developed *Zork*, a computer-story based on the Role-playing game *Dungeons and Dragons*. In *Zork* the player moves (by typing commands such as north, south, east, west) within an invisible landscape, a dungeon

26 ELIZA is a language analysis program that can run many different scripts and have different sorts of conversations; the most famous script by far was called DOCTOR, which Weizenbaum (1976)explained was "designed to permit it to the role of a Rogerian psychotherapist engaged in an initial interview with a patient" (2-3). While other sorts of literary machines had been devised previously, ELIZA/DOCTOR may have been the first piece of interactive software to exhibit literary qualities. (…) While it was not immediately embraced as literary, by referring to it as "parody", Weizenbaum himself suggested it may have an element of literary art in it. (Monfort, 2003)

of which the computer plays as *Dungeon Master*[27]. "*Zork* was focused on the experience of the participant, the adventurer, through such a clever rule system. *Zork* was set up to provide the player with opportunities for making decisions and to dramatically enact the results of those decisions." (77)

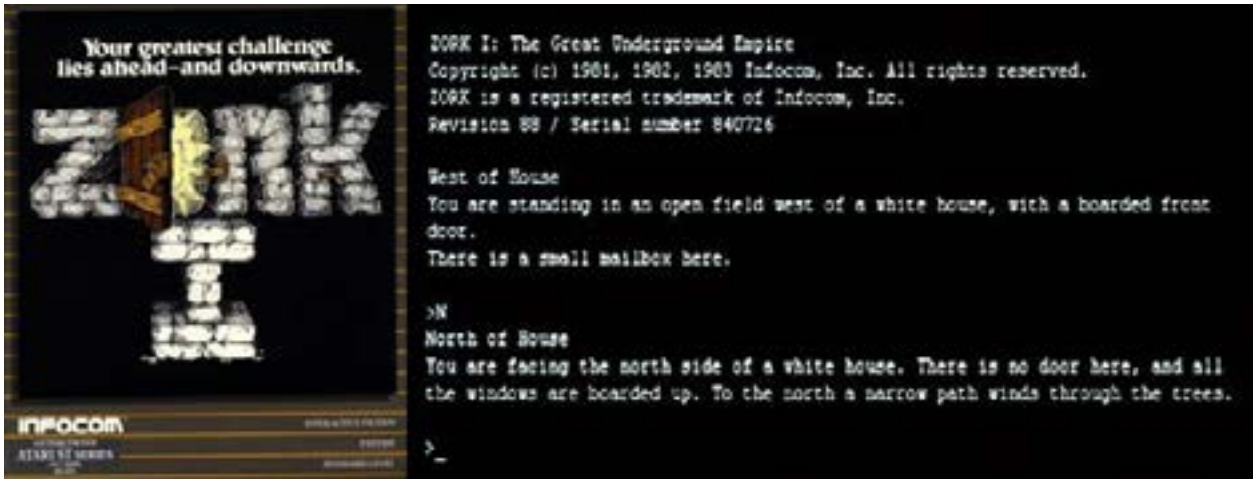

Fig. 5 Zork, *opening screen (Anderson, et al 1977-1979)*

The game has no graphic representation of the landscape, everything happens in text, communicating directly to the player's imagination and through their same language. The player is then encouraged to create a mental map of the dungeon transposing all the indication given by the program into his own imaginary landscape.

In order to succeed, the player has to show great problem solving and strategy abilities, "you must orchestrate your actions carefully and learn from repeated trial and error." (77) In some way, it was the computer dictating the set of instructions the player had to follow.

Following Murray's discourse, the next property that she recognizes as characteristic of digital environments has to do with their *spatiality*: "Linear media such as books and films can portray space, either by verbal description or image, but only digital environments can present space that we can move through." (79)

If Borges's *Garden of Forking Paths* had been written in digital media, the reader could actually explore the labyrinth that constitutes the setting and the structure of the short story. In a game like *Zork*, the reader can give

27 In *Dungeon and Dragons* the *Dungeon Master* is the game organizer and participant in charge of creating the details and challenges of a given adventure, while maintaining a realistic continuity of events.

navigational instructions to the program, that will display on the screen the appropriate changes. Moreover, the relation among the virtual spaces can be verified by the players simply tracing back their steps. Computers are also very efficient tools for storing data, this capacity increases exponentially when they all can be connected to one another in the Internet, creating a theoretically limitless web of data.

A global rhyzomatic encyclopedia, accessible at any time from every point of the network and constantly changing and expanding in every direction, a modern *Library of Babel*. The short story, *The Library of Babel* (Borges, 1941b), imagined an almost infinite library containing every possible combination of letters in a vast collection of 410-page books:

> The universe (which others call the Library) is composed of an indefinite, perhaps infinite number of hexagonal galleries. In the center of each gallery is a ventilation shaft, bounded by a low railing. From any hexagon one can see the floors above and below-one after another, endlessly. The arrangement of the galleries is always the same: Twenty bookshelves, five to each side, line four of the hexagon's six sides; the height of the bookshelves, floor to ceiling, is hardly greater than the height of a normal librarian. One of the hexagon's free sides opens onto a narrow sort of vestibule, which in turn opens onto another gallery, identical to the first, identical in fact to all. (Borges, 1941b)

The story recalls a space that challenges the logic and thinkable, though containing all that can be written in any language, the library's enormous knowledge is of almost impossible access. From the hexagons till the words in each page of every book, there is no visible organization. Therefore the people that inhabit the library live a doomed life, either trying to make a sense of their universe or in search of a specific book that could explain their own existence.

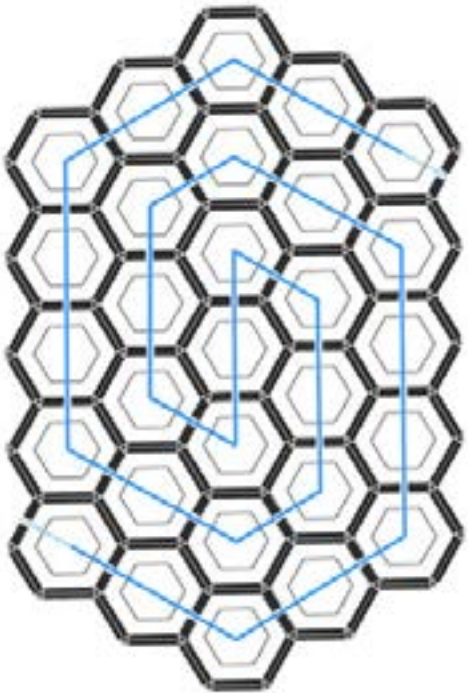

Fig 6 Hexagonal structure of the Library of Babel (libraryofbabel.info)

Writer and programmer Johnathan Basile carefully followed Borges's instructions and created a digital version of the Library of Babel, *libraryofbabel.info* (2015) that currently allows users to choose from about 104.677 potential books. Differently from the original version, the site also features a search tool, which allows users to retrieve the location in the library of any known word, sentence or page of text. Any individual page of any book ever written can be found in the library, but the possibility of finding any other page from the same work in the same volume is vanishingly small.

While the library contains every possible page, it does not yet hold every possible combination of those pages. "If this restriction were lifted", Basile explains on the website, the library would house "every book that ever has been written, and every book that ever could be – including every play, every song, every scientific paper, every legal decision, every constitution, every piece of scripture, and so on". (Basile, 2015)

The *encyclopedic* capacity of digital environments allows then, to gather and browse what was only hardly imaginable and of obscure organization. It also open possibilities for storytelling; the capacity of the computer shifts to the author giving them the opportunity to both go deeper in detail

and broadening the scope: "Like the daylong recitations of the bardic tradition or the three-volume Victorian novel, the limitless expanse of gigabytes presents itself to the storyteller as a vast tabula rasa crying out to be filled with all the matter of life." (Murray, 1997, 84)

If in 1964, in the book *Understanding Media: The Extensions of Man*, Marshall McLuhan coined the phrase *the medium is the message*, arguing that the medium should be the focus of study as "it is the medium that shapes and controls the scale and form of human association and action" (McLuhan, 1964). According to Murray, instead, once a medium has reached the maximum achievable level of expressiveness, the studying of it loses importance in favour of its bare function of transmitting a particular content:

> Eventually all successful storytelling technologies become *transparent*: we lose consciousness of the medium and see neither print nor film but only the power of the story itself. If digital art reaches the same level of expressiveness as these older media, we will no longer concern ourselves with how we are receiving the information. We will only think about what truth it has told us about our lives. (Murray, 1997)

An interesting perspective on the medium's transparency is given by Jay David Bolter and Diane Gromala in their book *Windows and Mirrors: Interaction Design, Digital Art, and the Myth of Transparency*. (2003)

The title of the book embodies its central metaphor, meant to convey two differing perspectives. One places the focus on a tool allowing the user to see through (windows) and one pointing out the property of the computer of reflecting its user's actions, needs and feedback (mirrors). Bolter and Gromala make a distinction between Structuralists and Designers. They refer to many of the inventive era of the World Wide Web as Structuralists. For them, the aim would be transparency; to make the information available seamlessly, to make the computer a useful appliance to assist the user, and to be a channel for information transfer that is a natural extension and one that is easy to use. On the contrary, Designers focus on the interface's mirror aspect that reflects the users and their contexts. The authors argue that from a technological point of view the computer should be transparent,

but as a new medium, bearing a whole set of new languages, design and art forms it should not aim at being invisible, rather at becoming reflective, at borrowing at reality to create an experience for the user:

> Although processors are being buried in all sorts of devices, computers continue to fascinate us. We continue to be exhilarated by and sometimes frightened of what digital technology is doing, and we are tantalized by the prospect of what it might do in the future. It is the task of digital art to fascinate, exhilarate, and sometimes provoke us. (Bolter & Gromala, 2003)

In *Writing Space* (1991) Bolter affirmed that, since the Renaissance, transparency has been the goal of visual arts, as the medium has always been supposed to function like a window for the viewer to see the objects represented. On the other hand, there was the simultaneous will that artists had, to make audience conscious of the media. "Instead of transparency, they strive for *hypermediacy*, an intense awareness of and even reveling in the medium" (Bolter, 1991). The author argues that the same media can aim at transparency in one case and hypermediacy in another:

> In general today we swing back and forth between a desire for transparent contact with the ostensibly real (unmediated) world and a fascination with the possibilities that media offer us. Because he number of old and new, analog and digital, media available to us today is very great, we live in an environment that is conducive to hypermediacy. (Bolter, 1991)

3.3 Digital media for writing and organizing information

In her *Electronic Literature: New Horizons for the Literary* (2008), Katherine Hayles affirms that in the twenty-first century all literature can be considered computational, as, also printed books are written, edited and composited as digital files, "they should be, then, properly considered as electronic texts for which print is the output form" (Hayles, 2008, 43), even though the computational nature of twenty-first century literature is more evident in electronic literature. Using Hayles's words:

> Electronic literature, generally considered to exclude print literature that has been digitized, is by contrast "digital born", a first-generation digital object created on a computer and "usually" meant to be read on a computer. (Hayles, 2008, 3)

The Electronic Literature Organization[28] provides a broader definition:

> Electronic literature, or e-lit, refers to works with important literary aspects that take advantage of the capabilities and contexts provided by the stand-alone or networked computer. Within the broad category of electronic literature are several forms and threads of practice, some of which are: Hypertext fiction and poetry, on and off the Web, Kinetic poetry presented in Flash and using other platforms, Computer art installations which ask viewers to read them or otherwise have literary aspects, Conversational characters, also known as chatterbots, Interactive fiction, Novels that take the form of emails, SMS messages, or blogs, Poems and stories that are generated by computers, either interactively or based on parameters given at the beginning, Collaborative writing projects that allow readers to contribute to the text of a work, Literary performances online that develop new ways of writing.[29] (Electronic Literature Organization, 2000)

28 The Electronic Literature Organization was founded in 1999 to foster and promote the reading, writing, teaching, and understanding of literature as it develops and persists in a changing digital environment. A non-profit organization, ELO includes writers, artists, teachers, scholars, and developers.

29 Available at http://eliterature.org/what-is-e-lit/ (accessed on 10/06/2015)

Electronic literature finds itself in a dynamic relation with computer science, since it is directly influenced by the technological developments in digital media, but it also keeps a strong connection with traditional literature. Along history, literature already experienced several changes in medium: from oral to written, from manuscript to codex to print and from mechanical print to electronic textuality. (Hayles, 2008, 58) In these passages it never loses all of the knowledge and the experience accumulated by the previous media, on the contrary, the most common tendency has been to try and replicate the procedures one was used to. According to Hayles, the same is happening with electronic literature, in the way in which the first exemples were strongly similar to print and only later they started developing procedures and structures more closely connected to the specific properties of digital media.

As Murray states, the encyclopedic property of digital environments is particularly important for their employment as tools for literary creation. This property had caught the interest of researchers from before the birth of the genre of electronic literature. In 1965 Ted Nelson presented a paper to the Association of Computing Machinery (ACM) in which he laid out his idea of a software framework that would enable access to all of the existent textual information and would allow connections among them as well as the production of new versions. Nelson's aim was that of creating a universal encyclopedia that would contain anything that had ever been published. Nelson attempted to realize his idea by developing the *Xanadu* project whose launching has been said to be imminent since 1965, even though part of what it promised has already been realized by the World Wide Web. Even if, as Nelson himself argues, the World Wide Web has some fundamental differences from Xanadu,[30] its conceptual contribution has been of great importance for its development, it is Nelson's concept of linking and jumping from one text to another following an associative thinking instead of a linear text that stands at the basis of World Wide Web.

30 In his 1999 paper *Xanalogical Structure, Needed Now More than Ever: Parallel Documents, Deep Links to Content, Deep Versioning and Deep Re-Use*, answering to those that describe Xanadu as an attempt to create the World Wide Web Nelson wrote: "It has always been much more ambitious, proposing an entire form of literature where links do not break as versions change; where documents may be closely compared side by side and closely annotated; where it is possible to see the origins of every quotation; and in which there is a valid copyright system-- a literary, legal and business arrangement-- for frictionless, non-negotiated quotation at any time and in any amount. The Web trivialized this original Xanadu model, vastly but incorrectly simplifying these problems to a world of fragile ever-breaking one-way links, with no recognition of change or copyright, and no support for multiple versions or principled re-use. Fonts and glitz, rather than content connective structure, prevail."

In the paper *You Say You Want a Revolution? Hypertext and the Laws of Media* (1993), Stuart Moulthrop theoretician and author of electronic literature, describes *Xanadu* as an attempt to reconfigure literate culture. Being no longer book bounded, hypertextual discourse can be modified and expanded with no limits. *Xanadu* would represent a universal book repository and publishing house, a modern, hypertextual *Library of Babel*. Nelson foresees a revolution in culture, a reader's and writer's harmony, in which there are no references but connections, the creation of a cultural community that would make culture universally available, though protecting intellectual rights through copyright. (Moulthrop, 1993)

In his paper of 1965 *A file Structure for the Complex, the Changing, and the Indeterminate*, Nelson introduces the term *hypertext* to mean "a body of written or pictorial material interconnected in such a complex way that it could conveniently be presented or represented on paper." (Nelson, 1965) Nelson's objective was to create a file that writers and scientists could use to organize their material during the writing process in a structure as rich and complex as they wanted or needed:

> My intent was [...] to think out the *dream* file; the file system that would have every feature a novelist or absent-minded professor could want, holding everything he wanted in just the complicated way he wanted it held, and handling notes and manuscripts in as subtle and complex ways as he wanted them handled. (Nelson, 1965)

Namely, the system would feature an up-to date index of contents, it would allow large bodies of texts, commentaries and lists with no hierarchical orders, it would file texts in any desired order and under an unlimited number of categories, it would hold commentaries and notes as well as keep track of changings and previous versions. (1965) It would also be provided with a *dynamic outlining* that "uses the change in one text sequence to guide an automatic change in another text sequence" (1965). In general, the system will present *evolutionary features* allowing the revision of a text by keeping all the intermediate versions to be analyzed and compared. The structure Nelson designs is called ELF (Evolutionary List File), a relatively simple structure that can be used as a pattern and compounded in different ways. The ELF has three fundamental elements: *Entries, Lists* and *Links*:

> An *entry* is a discrete unit of information designated by the user. […] A *list* is an ordered set of entries designated by the user. […] A *link* is a connector, designated by the user, between two particular entries which are in different lists. An entry in one list may be linked to only one entry in another list.

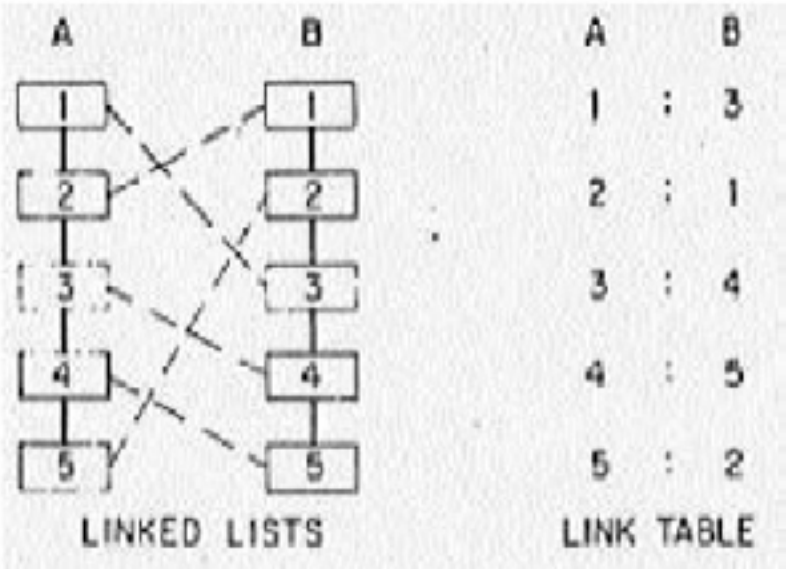

Fig 7: Zippered lists (Nelson, 1965)

According to Nelson , the ELF is the ideal file structure for an hypertextual environment based on association instead of hierarchies or fixed categories. A rhizome-like system, to represent information, always changing and always building new connections, because "any field and the corpus of all fields is a bundle of relationships" (1965). In this sense, the most important characteristic of the ELF is its capacity to evolve, to change and to keep track of changes, to build new links and to adapt its lists and entries accordingly.

The Web would thus be just a particular subtype of hypertext, what Nelson, in his 1974 volume *Computer Lib / Dream Machines*, calls "discrete or chunk style hypertexts," consisting not of complete texts but of "separate pieces of texts connected by links".(Nelson, 1974) According to Nelson's description, the text would appear on the screen and could be moved forward and back, links would be presented by keys in the text, that would not lead to an ordinary footnote, rather to an entirely new screen presentation. Every key would be a *jump*:

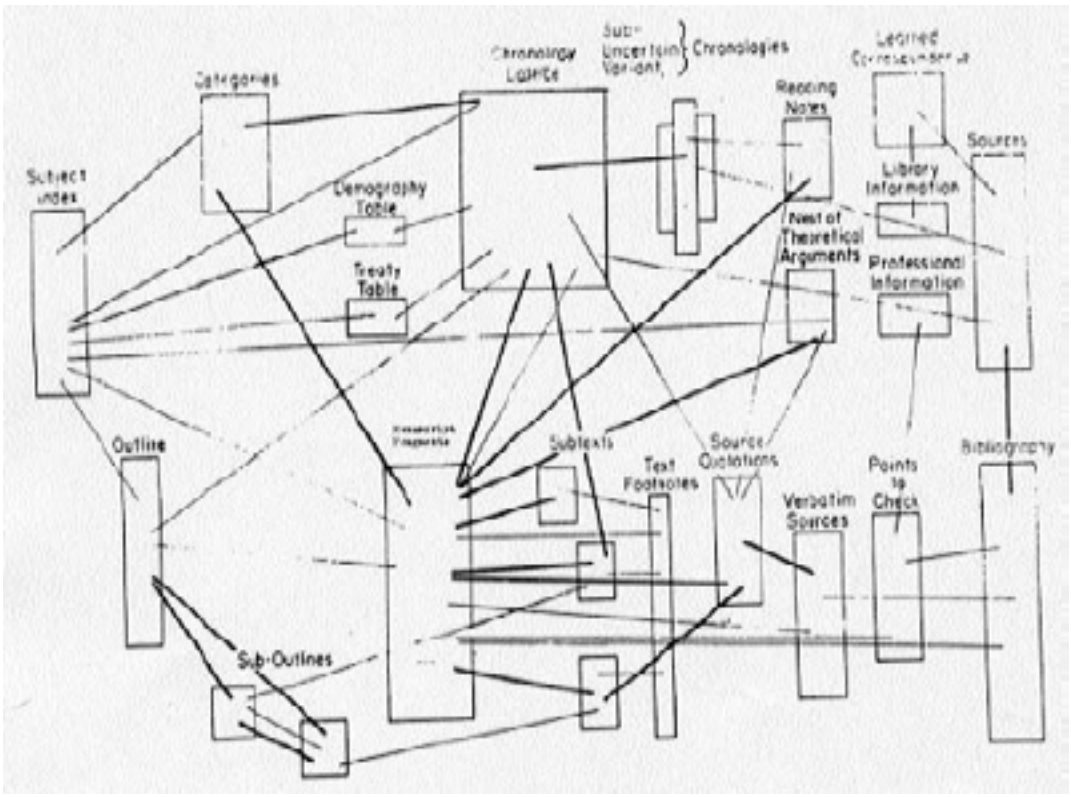

Fig 8: ELF's capacity for total filing: hypothetical use by historian (Nelson, 1965)

Fig 9 Computer Lib/Dream Machines, *double cover (Nelson, 1974)*

Such a structure should allow the reader to subvert the linear organization of the text, enabling them to follow their own path, according to their personal associations and not to some pre-defined hierarchical organization. If in non-fictional hypertext to follow one link or another is a choice dictated by association of ideas or interest in reading more on one particular topic, when hypertextual structures are used in a fictional context, the reader movement through the links may take the shape of an hidden quest. Narrative takes a game-like form and the act of reading becomes the quest to the discovery for the narrative resolution. (Pisarski, 2011)

This mechanism is especially common in the works of electronic literature created in the platform *Storyspace*, an hypertext authoring program ideated by Michael Joyce, David J. Bolter and John B. Smith and presented during the first International Meeting on Hypertext at Chapel Hill in October 1987, it was then licensed by Eastgate Systems that improved it and maintained it. (Hayles, 2008, 6)

It was the first program developed for creating, editing and reading hypertext fiction and allows to organize a narrative in story blocks connected by a sophisticated link system as well as attaching conditions to segments of text, enabling them to dictate different orders in which texts can be read.

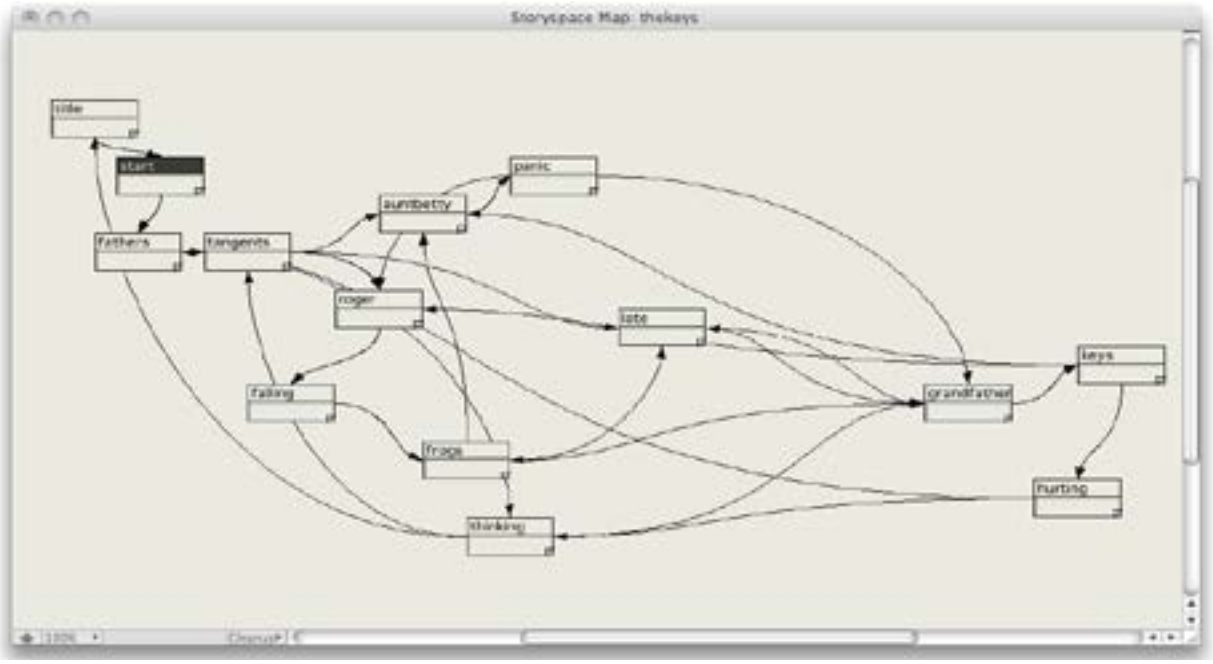

Fig 10 Storyspace screenshot (http://www.eastgate.com/storyspace)

The program also features three interfaces offering readers varied degrees of autonomy. One allows readers to only navigate via default connections (*Storyspace Easy Reader*), a second lets readers choose between defaults, paths, or hot words (*Storyspace Page Reader*) and the third, that includes a cognitive map, leaves complete autonomy, freeing readers to do all of the above, as well as to wander through the hypertext via the map, completely disregarding every pre-created connection (*Storyspace Reader*). (Douglas, 2000)


Hell, we were weaned on the economics of death according to Hollywood. On the four o'clock movies wedged in between school and dinner, on the early evening and late Saturday films that kicked around on the UHF stations, you'd witnessed maybe eighteen thousand deaths. Shit, maybe thirty thousand: it depended on how many times you'd watched *The Wild Bunch*.

Fig 11 Storyspace Easy Reader Interface (Douglas,2000)

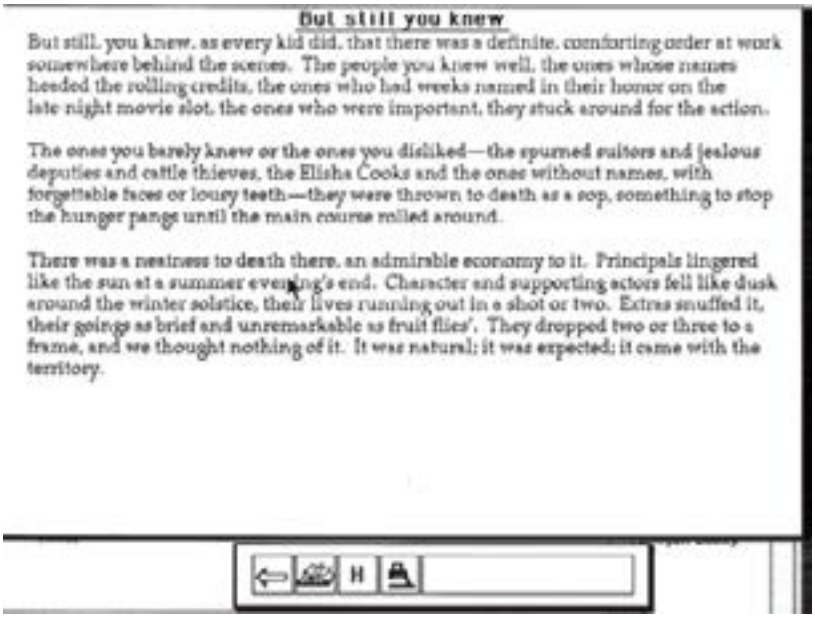

Fig 12 Storyspace Page Reader Interface (Douglas, 2000)

As Douglas explains, there could be some problems in using the third interface as, even if a narrative can theoretically be ideated to be read in a complete random order, this could take away some of the pleasure of fiction, given by symmetry and a certain extent of predictability:

> Order gives us some of the delight we take in fiction, the comforting sense that things are predictable, stable, and knowable, that effects always have causes that can be traced, and causes effects that can be discovered, the sense that everyone murdered, mugged, arrested, or convicted merely receives what he or she has coming to them. (Douglas, 2000, 126)

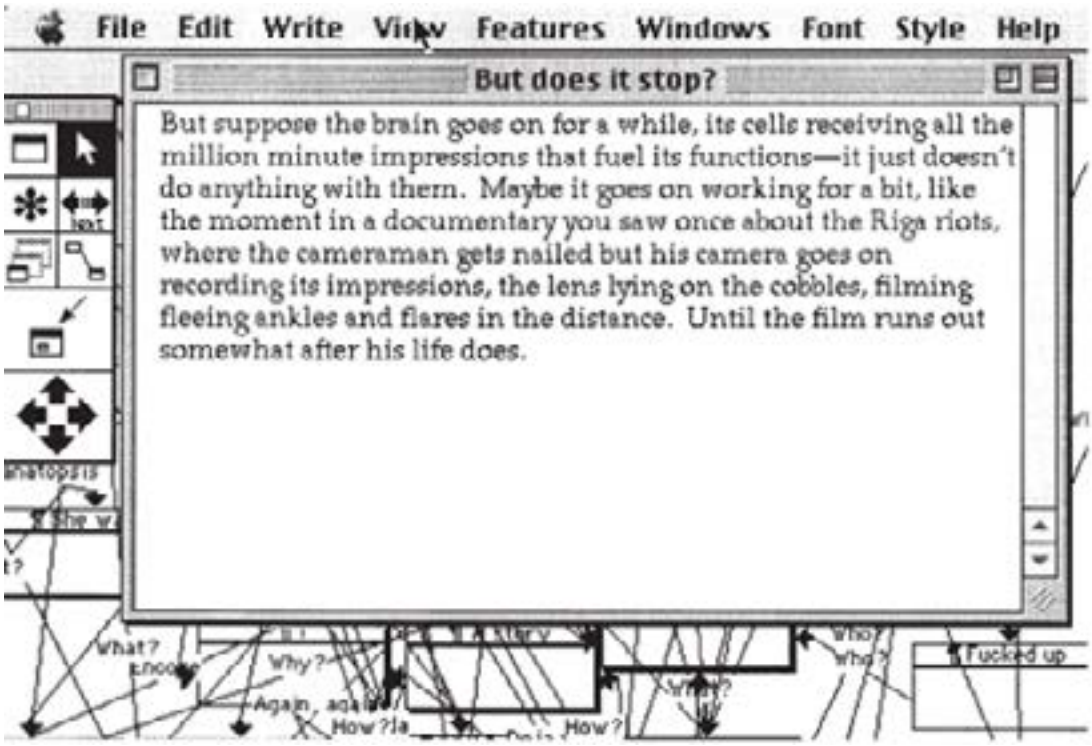

Fig 13 Storyspace Reader Interface (Douglas, 2000)

According to Aarseth order has a vital role in the reception of a literary text, its integrity depends on the order of its sequences (1997). Agreeing with the theory of literary dynamics that affirms that the reader's capacity of linking and arranging the text in a set of mental frames is fundamental

for the reception of the literary work, Aarseth goes even further affirming that without the linear stability that constitutes the set of reference the reader relies on, the work would not exist (1997). In Aarseth's opinion, the instability nonlinear narratives create is strongly connected to the *medium*: "it is only after we have started to notice the *medium* and its recent shifting appearances that we can begin to observe the effect this instability has". (1997)

As a medium, the book can be considered a "Highly sophisticated use of a relatively primitive tool, the printed word". (Douglas, 2000, 129) As far as its content and its internal structure can be extremely complex, as a physical object its appearance stays the same, regardless of the complexity of its content, its linearity is only broken by endnote or footnote on the margins. In a book everything related to its existence as physical object is there, touchable and explicit. (Douglas, 2000, 130)

On the contrary digital literature always has at least one layer of text that is kept invisible to the common reader, the technology that makes the pages turn, that makes the reader move from one story block to another simply pointing and clicking on a link or hot word. The code underlying the interface, is hidden to most readers, who can often just try to guess the mechanics: "Although the scripting may be as artful as the prose – and its creation more arduous than the writing of *Moby-Dick* – these are entirely invisible strata of text, levels that manipulate us but, if the author chooses, we can never see". (Douglas, 2000, 131)

When deprived of an order and an explicit structure to serve as stable frame for the reading , the reader would try to find in the fragmented text the sense of a whole, to organize their own linearity, the right path in the labyrinth. The constant searching for a unity and the recurring failure in finding one is, according to Aarseth, the main literary mechanism of most hypertext novels, the *aporia*.

Differently from what happens in traditional media, where the reader may not be able to make sense of a given part though having access to all of the text, having the whole book in their hand; in digital literature aporia prevents the reader from finding the sense of the whole due to being precluded from accessing part of it.

Complementary to the aporia, in the dynamics of hypertext literature, is its antithesis, the *epiphany*, the sudden revelation that opens to the reader the possibility of understanding, of sense making. Differently to Joycian

mystical epiphany, hypertext epiphany is immanent, is the result of a programmed construct, is not casual, instead, it was carefully planned in every detail.

> Together, this pair of master tropes constitutes the dynamic of hypertext discourse: the dialectic between searching and finding typical of games in general. The aporia-epiphany pair is thus not a narrative structure but constitutes a more fundamental layer of human experience, from which narratives are spun. (Aarseth, 1997, 91-92)

The aporia-epiphany dynamics can be more or less guided by the author, who can decide to leave varying levels of autonomy to the reader and produce, as a result, a more or less playful text.

Afternoon, a Story (Joyce, 1987) is known to be the first work of hypertext fiction. Created in Storyspace, it is organized in a branching structure composed of 539 *lexias*[31] that can be read in different orders offering different plot developments according to the reader's choices.

The narrative takes the shape of the path to the solving of a puzzle, which sees the main character, Peter, seeing or not seeing his son dying in a car accident. Although the reader chooses a personal path throughout the narrative, the writer's control is still quite evident. First of all, an overview of the narrative structure is not provided, and the *hot words* connecting one story block to the other give no hint on where they lead. Moreover, some links have been programmed to return to an already written lexia in order to allow the reader to choose a different link.

If *Afternoon* followed the pattern of an Aristotelian narrative we could say that the climax is reached on a specific lexia, "White afternoon", which is surrounded by a *guard field*, "a program conditional that prevents a reader from accessing it until certain other lexias have been opened" (Hayles, 2008, 61). In this crucial lexia, the reader finds out that Peter may have been the one who caused his son's accident and, consequently, his death. But often, it is only after repeated tries that the reader can actually access this central lexia and, maybe, solve the mystery, although with still an ambiguous answer.

31 The blocks of text an hypertext is composed of.

Fig 14 Afternoon, a story, *opening screen (Joyce, 1987)*

From a technical point of view, the work uses screens with text and minimal graphic, with no sound, color or animation showing how the connection to the traditional medium, especially in terms of interface is still strong. Joyce, in fact doesn't seem to be interested in exploiting the specific properties of the digital medium.

Fig 15 Afternoon, a story, *Screenshot (Joyce, 1987)*

Different, especially from a technical point of view is another work by Joyce, *Twelve Blue* (1992), an HTML hypertext inspired to the flowing of a common user in the Web, led by associational thinking. The plot is less defined and with a less clear objective than in *Afternoon*, using Joyce's words from the introduction to *Twelve Blue* in the *Electronic Literature Collection, Volume 1* (ELO Publications,2006):

> A drowning, a murder, a friendship, three or four love affairs, a boy and a girl, two girls and their mothers, two mothers and their lovers, a daughter and her father, a father and his lover, seven women, three men, twelve months, twelve threads, eight hours, eight waves, one river, a quilt, a song, twelve interwoven fofo, a thousand memories, *Twelve Blue* explores the way our lives – like the web itself or a year, a day, a memory or a river – form patterns of interlocking, multiple, and recurrent surfaces. (Joyce, 2006)

As suggested by this description, the work is a stream of images, events and characters that can overlap, cross, or go parallel to each other, the reader doesn't have to solve any puzzle, is rather invited to follow the flow, to follow the sequence of spontaneous associations and to enjoy the experience.

Differently for the minimalist black and white graphic of *Afternoon*, *Twelve Blue* opening screen (Fig. 10) consists of a menu on the left side showing the story lines, represented in various colors and allowing for a navigation that does not depend on the hyperlinks in the text and of twelve threads coloured in different hues, against a dark blue background. The threads are divided into 8 vertical bars, reminding of the music scores. When a score is played, the threads react, weaving into patterns mixing sound and sight in a synesthetic-like behavior.

The sequence that opens is the result of this mixture, representing the orientation that the threads have in the bar we have chosen. At the screen bottom an URL appears, indicating the bar and the thread of a specific sequence. The navigation is more autonomous than in *Afternoon*, although it is more difficult to follow the plot, to distinguish the character and to link the fragmented events in a hypothetic whole. As Hayles suggests:

> Gradually, as the player enters the flow and lets it enter her, she comes to recognize patterns and sees them emerge into recognizable shapes. Think of staring at a random dot image; if one strains one only delays the emergence of the pattern, but If one relaxes and lets it take over, the subconscious puts together the information and suddenly the patterns leap out. (Hayles, 2008, 66)

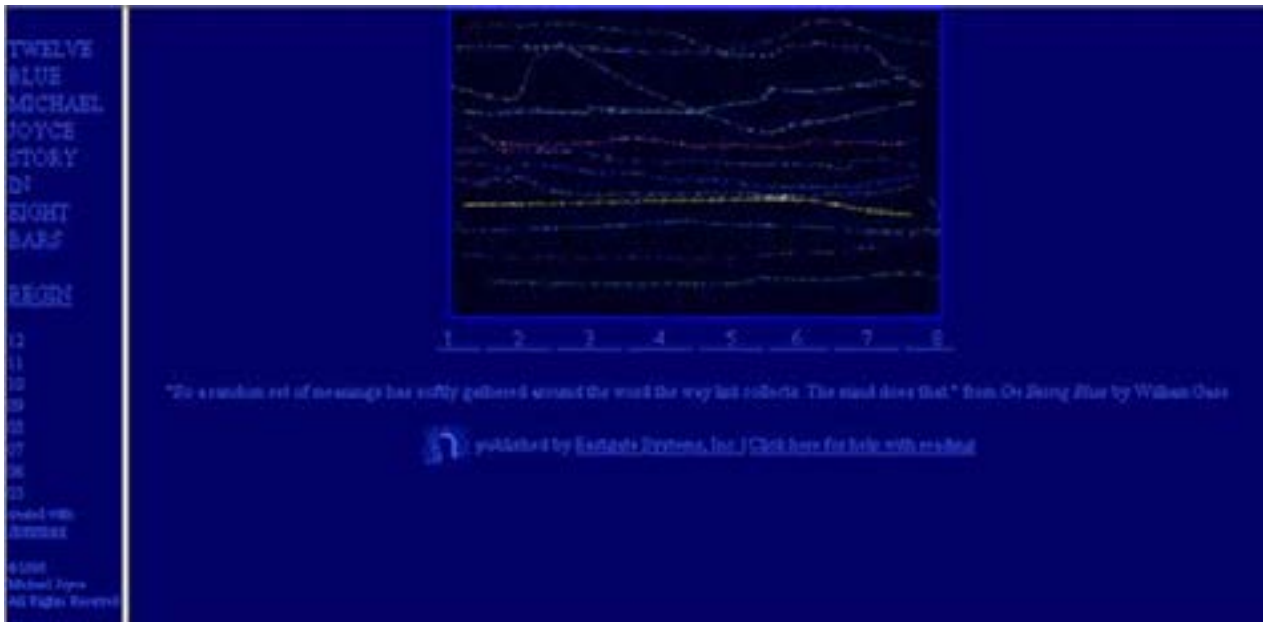

Fig 16 Twelve Blue*, opening screen (Joyce, 1992)*

According to this perspective, after the recurring aporias that preclude the reader from making sense of the body text, of having any hint on whether there exist a right direction to be taken in the labyrinth of fragmented sequences, images and characters; the epiphany would seem to come almost as spontaneously and contingently as one in a James Joyce's work, and not dictated by an HTML code. If in *Afternoon*, the aim of the author still seems that of telling a story, in *Twelve Blue* it looks like the focus has moved from the content to the medium, once again, from the result, intended as the resolution of the storyline; to the process, the navigation experience. Similarly, in James Joyce's last work *Finnegans Wake* (1939) the

reader can witness to the stream of consciousness technique taken to its extreme, at the expense of a narrative that most readers find obscure and difficult to follow. In this sense, *Twelve Blue* explores the potentiality and the characteristics of a relatively new medium, trying to represent what could most likely be the experience of a user navigating in the infinite space of the World Wide Web. James Joyce's focus of analysis was introspection, it was to represent the deepest and most spontaneous corners of the human mind waiving any filter; Michael Joyce's realm of study is the newborn web, its flow of associations and its thick pattern of linking information.

3.4 CONCLUSION

As we have seen, digital media are affirming themselves as creative tools. The examples we have taken in consideration in this chapter show how pieces of digital literature have the tendency of progressively using more and more of the specific properties of digital media, enhancing their expressive potentials. In this sense, the medium doesn't seem to be getting *transparent*. Works such as *Zork*, *Twelve Blue* or *libraryofbabel.info* focus on the experience of traversal of the text rather than on the content; we can affirm that the content consist of the experience of traversal, on the process. The medium is less and less only a tool for expressing some particular content. Content and medium aren't separated anymore, they are on the same level and they work as a dynamic system. It is in this way that the text becomes *cybertext*. An harmonious system comprehending the text, its medium and its possible readings not as separated and independent elements, but as a dynamic whole.

CHAPTER IV

THE READER

4.1 Introduction

In this chapter we will analyze the reader's role in nonlinear narratives and how it changes between analog and digital media; we will also follow the reader's path in the traversal of some relevant nonlinear works to analyze them from the reader's point of view in order to explore their dynamics of traversal.

Several are the themes that will be taken into consideration in the analysis, starting from the concept of reader's freedom in hypertext fiction and Joyce's classification based on hypertext navigation between *exploratory* and *constructive* hypertexts, we will then question on multiform narratives and on the reader's behavior in labyrinthine texts. After that we will explore texts that put the reader in an active and playful role till the point of being considered *interactive* works which can be co-authored by the reader.

Finally the theme of closure will be analyzed, together with the implications it has with the reader's experience.

4.2 The reader's freedom and the text as a labyrinth

According to Nelson one of the most revolutionary characteristics of hypertext is the freedom it leaves to the reader not only to choose the order in which they want to read a text, but also to follow their own set of associations and interests and just read what they really want to, clicking on the "hot words" that lead to a specific topic rather than following the linear developing of the text as decided by the author:

> A book is never perfectly suited to the reader; one reader is bored, another is confused by the same pages. No system of paper- book or programmed text – can adapt very fare to the interest or needs of a particular reader or student. (Nelson, 1965)

The extent of freedom and influence readers have on hypertext is strictly linked to their navigational abilities and the kind of hypertext environment they are leading with. Michael Joyce distinguishes two types of hypertext environments; *explorative* and *constructive*. (Joyce, 1988)

The term explorative hypertext describes the usage of hypertext as a mere delivery or presentational technology, it encourages the reader to shape the text according to their needs and interests and to use their navigational capabilities to experiment different ways of reading it. On the other hand in constructive hypertext readers can turn into *scriptors* (Douglas, 2000) that is to say, into contributors to the text, into authors of *lexias* that they organize according to their interests:

> A constructive hypertext should be a tool for inventing, discovering, viewing, and testing multiple, alternative, organizational structures, as well as a tool for comparing these structures of thought with more traditional ones and transforming the one into the other. (Joyce, 1988)

Constructive hypertexts enable readers to act like scriptors and encourage them to experiment new cognitive skills based on linkage and associative thinking. Hypertext reader and writer would become, then, co-learners and co-authors (Coover, 1992) and the reader's freedom could be considered as freedom from the author, or at least of the romantic idea

of it. The author that knows everything and decides everything about the text and the reader's experience. But being freed from the author's "dictatorship" also means being freed from the guarantee of coherence, of a cohesive storyline that the author brings everywhere they want, but still, somewhere. For the reader to be free in an hypertext environment means to be alone in a multiform maze, it means to have to find their own path, with no certainty of whether there is a right direction to choose, and taking the risk of being caught in a circle of aporias, with no epiphany granted to come, to light the way, making sense of the story and assuring the pleasure of reading.

Moreover, being free also means having a responsibility for your own reading experience. If readers become co-authors they gain a certain extent of decisional power, of influence on the text, therefore the pleasure of reading itself could be ascribed to their own navigational skills, to the pertinence of their choices. Excessive freedom brings the risk of undermining literary dynamics based on the reader's pleasure of anticipation and removing that conventional distance from the story that is, paradoxically, so powerful in creating an immersive experience. In this sense, the reading takes the shape of a game in which one either wins or loses:

> Hypertext does increase the agonistic element in reading. Early experience with hypertext narrative suggests that its readers may actually be more concerned with prior authority and design than are readers of conventional writing. (Moulthrop, 1993)

Nevertheless, the strong and palpable presence of an author doesn't always guarantee the absence of playfulness and the certainty of a coherent storyline in which the reader has the passive role of receiver of a message that they just have to enjoy or dislike. Murray uses the term *multiform story* to describe a narrative that presents a single situation in multiple versions that, in ordinary experience, would exclude one another (Murray, 1997) for reasons that have to do with narrative coherence or mere logic and temporal linearity.

Murray recognizes as the most representative example of a multiform narrative Jorge Luis Borges's *The Garden of Forking Paths* (1941), stating that the work can be considered as a hypertext novel in codex format, since it presents the idea of an infinite narrative that revolves around itself and the endless traceable lines in space and time (Murray, 1997). Borges seems "vis-

cerally aware of the increased complexity of human consciousness and the failure of linear media to capture the structure of our thought" (Murray, 2003). The central concept of the narrative is that a text can be itself a labyrinth, to say it in Borges's words, that "the book and the maze are one and the same" (Borges, 1941). The question that comes as a natural consequence to the reader is then, is the *Garden of Forking Paths* itself a labyrinthine text?

The story begins by alluding to a book by Liddell Hart, called *Historia de la Guerra en Europa.* An editor, about whom we know very little, summarizes a paragraph from Hart's work, and explains that the following text, the confession of the spy Yu Tsun, "[…] throws an unsuspected light over the whole affair" (Borges, 1941,19). The reader is thus prepared for an alternative account of the historical facts found in Harts's *Historia*. And yet in these very first lines, the story is already weaving its deceptive web, inaugurating a game of eliciting the wrong expectations in the reader, a game that will continue throughout the whole storyline (Weed, 2004). There are stylistic elements which contribute in disorienting the reader. We seem to be reading a spy-story or an action adventure: the narrator, Dr Yu Tsun, is a German spy during World War I who knows that it is probable that he has been discovered and therefore he is in danger of death, he decides to kill the sinologist Steven Albert choosing his name from a phone book, in a mysterious plan to save his life. Given this opening situation, the reader would expect a fast-paced narrative, full of action and suspense, and yet the first person narrator constantly digresses into philosophical speculation. After a hurried escape by train, the tone of the narration abruptly changes and the narrator has time to daydream about fantastic labyrinths. The forty minutes of the train trip extend, as if time itself had slowed down, until the abrupt appearance of the spy-catcher, Richard Madden, breaks the spell (Weed, 2004). The reader doesn't know why Yu Tsun consults the telephone book, takes a train to Ashgrove, walks to Stephen Albert's house, and kills him. Only immediately after the murder of the sinologist the nature of the plan is found out. Albert has dedicated his whole life to the study of a novel, also called *The Garden of Forking Paths* written by an ancestor of the narrator, the story is a labyrinth, involving a complete reconception of time and a rhizome-like vision of reality:

> In all fiction, when a man is faced with alternatives he chooses one at the expense of the others. In the almost unfathomable Ts'ui Pen, he chooses – simultaneously – all of them. He thus *creates* various futures, various times which start others that will in their turn branch out and bifurcate in other times. (Borges, 1941,98)

In Ts'ui Pen's narrative, time is nonlinear, is a web, including , at the same time all of the possibilities. Albert's revelation to the narrator is that the real world is the same, pullulating with alternative realities, even if "we do not exist in most of them" (100).

> The garden of forking paths was the chaotic novel; the phrase the various futures (not to all) suggested to me the forking in time, not in space. A broad rereading of the work confirmed that theory. In all fictional works , each time a man is confronted with several alternatives, he chooses one and eliminates the others; in the fiction of Ts'ui Pèn, he chooses – simultaneously – all of them. He creates, in this way, diverse futures, diverse times which themselves also proliferate and fork. (Borges, 1941)

Even if the narrator feels guilty for the murder he committed , Albert's theory about the multiple versions of reality partly absolves him. The murder, in fact, has actually occurred only in one of the infinite versions of reality. Moreover, it is a "triumph of cryptography" (Murray, 1998,31), in fact, by having his name linked to the one of his victim in newspapers, he succeeds in sending the Germans the message to attack a city named Albert.

The story does not allow the reader to change perspective and see the labyrinth from above. A first-time reader is left with the feeling that there was something which they didn't understand, something which they must have missed. There remains something elusive, always the feeling that there is something hidden that cannot be clearly seen, but which is on the verge of revealing itself. In a typical unicursal labyrinth, the subject enters, and passes very close to the center, but cannot know this, because the path immediately carries them far from the goal again, before returning to the center (Weed, 2004). In the same way the narrative develops in circles and parallel levels, in a

web of different times and places all intertwining and, at the same time excluding each other.

The nonlinear nature of Borges's story makes it a perfect subject for an adaptation in a digital environment. Where, as it is with the *Library of Babel*, the existence of intricate paths cannot just be hypothesized and imagined but actually programmed through code, represented and made explorable.

In digital media "The traditional narrative time line vanishes into a geographical landscape or exitless maze with beginnings, middles and ends being no longer part of the immediate display" (Coover, 1992). The labyrinth-like structure is an intrinsic characteristic of the medium that made it perfect to try and represent Borges's intricate storyline.

It was exactly this Moulthrop's first aim when, in 1992, he published *Victory Garden*, an hypertext novel composed in Storyspace. The work includes 993 lexias, and more than 2804 links connecting them, there also are other features, like a menu of preordered paths, and a map to see the *Victory Garden* from above, and it employs the simplest variant of reader interfaces *Storyspace* offers. The navigation mainly happens through a toolbar with five functions: the backtrack button (takes you back to the previously read lexia), the link list button (opens a window listing all the links leaving from the current lexia, each link is named and the title of destination lexia is told), the yes/no button (can be used to answer possible questions in the text), the print button (makes a hardcopy of the lexia), and the type-in field (Koskimaa, 2000). The reader can choose among different ways to move in the text: by pressing the return key after reading each lexia, double clicking hot words, opening the link list and selecting a link, by typing a word in the type-in box or back-tracking their way. Moreover, the reader can go to the map and choose one of the lexias presented there as starting point; or choose among the twenty preordered pathways through the text, each concentrating on different aspects of the storyline. (Koskimaa, 2000) From a technical point of view, *Victory Garden*, like *Afternoon*, is dominated by plain text. The map in the beginning is one exception in addition to a few lexias with crude graphics

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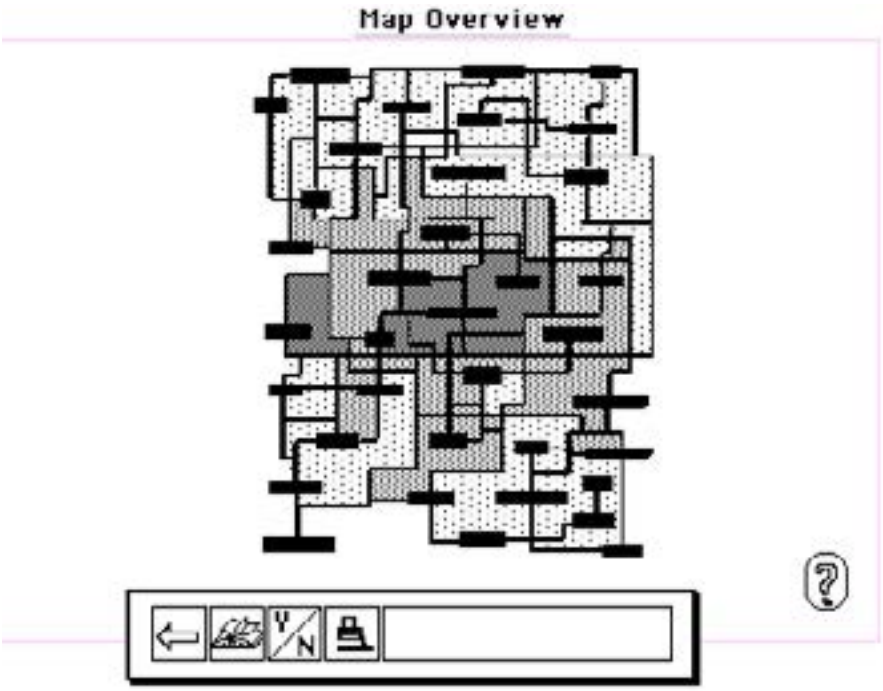

*Fig 17 :*Victory Garden*, map overview (Moulthrop, 1992)*

The narrative follows the intertwining lives of different characters during the Gulf War. The core happening is the death of one of the characters, Emily, which, nevertheless can be avoided by making appropriate choices in the reading path. Like in Borges's short story, the presence of alternative realities comes with the hope of reversibility of death, as the reader was in a videogame in which the character comes back to the beginning every time they die, to try and play again, avoiding the same mistake. As Murray explains:

> The reader is protected from feeling the irreversibility of death by the fact that the stories do not have to end there. The boundlessness of the rhizome experience is crucial to its comforting side. In this it is as much of a game as the adventure maze. (Murray, 1997,134)

4.3 ACTIVE READING AND INTERACTIVITY

The Eye (1930)[32], by Russian writer Vladimir Nabokov, is an example of a kind of plot that manipulates narrative conventions, by the use of a completely unreliable narrator who causes the reader to question the truthfulness of his affirmations and encourages them to play an active role in the reading of the text in order to understand what it is really happening.

At the beginning of the story the first person narrator is the archetype of a character by Gogol or Dostoyevsky: a psychological tormented yet ambitious young bourgeois. He works as a private tutor to the sons of a Russian émigré family in Berlin, a job that he finds quite humiliating but that gives him plenty of occasions to make an impression on people of higher class. He is also having an affair with a married woman, Matilda, but is bored with her, in addition, he feels lonely, is full of self-pity, and is neurotically self-obsessed. (Johnson, 2005)

> I was always exposed, always wide-eyed; even in sleep I did not cease to watch over myself, understanding nothing of my existence, growing crazy at the thought of not being able to stop being aware of myself. (Nabokov, 1930,17)

When Matilda's husband finds out about the affair he thrashes the narrator in front of his pupils. Feeling that this is his most complete humiliation, the narrator decides to commit suicide.

Even though there is something unusual about a first person narrator committing suicide at the beginning of a story, Nabokov exploits the natural tendency that readers have, to believe to what a first person narrator says. (Johnson, 2005) That tendency that prevents most of them from paying attention to a hint about the fact that the suicide is probably planned to fail: "I drew away my awkwardly bent arm a little, so that the steel would not touch my naked chest" (Nabokov, 1930, 28) and to believe that the character is actually continuing to observe and tell the story after his death. In fact, he then begins to tell about a family who live above him, focusing his attention especially on two people. The first is a woman, Vanya, the second is Smurov, an enigmatic young man whom he describes in a very flattering manner: "everything he said was intelligent and appropriate" (40). By this point the

32 The title in Russian is Соглядатай, *Sogliadatai,* literally voyeur, observer or peeper. The choice of the title in the English version as well as the whole translation were curated by Nabokov himself.

most attentive reader realizes, that the narrator and Smurov are the same person. He is speaking about himself in the third person mode, as if he was observing his life from the outside. Nabokov's skills in manipulating this mode consists in making Smurov principally unreliable to himself, but giving the readers enough information via his narrative to work out the truth. The reader realises, for instance, that he is in love with Vanya, and several scenes of the story are built around his clumsy and embarrassing attempts to pay court to her only to discover that she doesn't reciprocate his feelings (Johnson, 2005). What Nabokov has done is devising strategies for having a first person narrator condemn himself to unreliability by his own account whilst giving the reader the pleasure of slowly discovering it. In this sense reader and author seem to be playing a game at the narrator's back, who, though completely unreliable, lets the reader enjoy the slow discovery of the underlying version of the story.

In texts like this the reader is continuously reminded of the storyteller's role and invited to join the creative process or at least to ponder about it. As a consequence the axis author – narrator – reader is subverted and the narrative is not offered to the reader for their entertainment as a finished product but is presented as a process of choices the author has made, choices that often exclude other possibilities. (Murray, 1997) Though unsettling for the common reader these procedures can be considered as an invitation to exit the passive role of addressee or simple audience, of being freed by the author's dictatorship by joining the creative process.

The novel *If on a Winter's Night a Traveler* (1979) by Italo Calvino serves as a good example as, through its structure, it encourages the reader to meditate on the process of fiction writing, seen as making choices among infinite available possibilities.

The whole novel is built around the relation between writing and reading. Calvino focuses his attention on the reader by writing a text about a reader character who reads, and books that are read. To do this he layers different narratives and extra-narrative levels. There is one main narrative in second person, that addresses the reader and works as a frame for the other ten narratives in first person that begin and are interrupted within a few pages. The novel is the story of a Reader that begins to read of a novel called *If on a Winter's Night a Traveller* whose incipit addresses directly the non-fictional reader: "You are about to begin reading Italo Calvino's new

novel, If on a Winter's Night a Traveler. Relax. Concentrate. Dispel every other thought". (Calvino, 1979) Thirty pages or so into the book he realises that his copy is corrupt and consists of the same thing over and over again. Returning to the book store he discovers that what he thought was Calvino was actually a book by a Polish writer. Given the choice between the two he goes for the Polish book, but the new book turns out to be yet another novel by a different writer, as does the next, and the next. The book becomes a collection of incipits of novels, each of a different genre and each written in a different style. To say it in Calvino's words "In this view the book represented autobiography in negative: the novels that I could have written and I didn't choose" (Calvino, 1979).

First and second person narrations intertwine within the stories, openly showing the game of level shifting as one of the main theme of the novel. The explicit invitation to the empiric reader to identify with the Reader is presented as a game between the text and the reader. The novel creates a paradox in an attempt to erasing the line that divides the real world of reading and the "possible" world of writing on which fiction is based. (Cuniberti, 1984) The reader to whom the text is addressed can be considered what Umberto Eco defines as *Model Reader*[33] (Eco, 1979): an entity that is not the individual who reads the book but that ideal reader that the writer prefigures when composing the piece.

> It's better not to know authors personally, because the real person never corresponds to the image you form of him from reading his books. (Calvino, 1979)

As readers build an image of the authors and their intention, in the same way the writer engage in a *textual strategy* (Eco, 1979) in the aim of getting to the most univocal reading. Nevertheless *Model Reader* and *Model Author* are entities that exist outside the text, as ideal sender and receiver of it. On the contrary, Calvino's Reader is a character of the novel, that reads a novel about a man in a train station, and in order to go on reading that

33 Eco distinguishes between Empirical and Model reader. The empirical reader is the "concrete subject of acts of [textual] cooperation"; he "deduces a model image of something that has previously been verified as an act of utterance and which is textually present as an utterance." (Eco, 1979). Briefly, he is the one who views the text pragmatically. The Model Reader is " «able to deal interpretively with the text in the same way as the author deals generatively [in producing the text] […] a textually established set of felicity conditions [...] to be met in order to have a macro-speech act (such as a text is) fully actualized" (Eco, 1979). It is a creation of the text itself, an artifice that every book creates and that can be considered as the ideal addressee.

first story ends up reading another and another again, in a "regressus ad infinitum" (Cuniberti, 1984) that seems to continuously restate and remind that literature is, above all, artifice. The author, rather than addressing his *Model Reader*, seems to be showing how the figure of it is created throughout the process of fiction writing; he shows to his *Empirical Reader* how he, as author, creates his own *Model Reader*, and he invites them to join him in the creation of it. The fact that the novel consists of 10 incipits represents an invitation to ponder on the difficulty of finding a whole and making sense of it, in a world which is a web of connections: "In a world that is perceived as a vast interconnected web, how is the author to know which thread to pull on first". (Murray, 1998,38)

> Don't ask where the rest of this book is!" It is a shrill cry that comes from an undefined spot among the shelves. "All books continue in the beyond... (Calvino, 1979).

In Marc Saporta's *Composition n° 1* (1961), the task of "pulling the threads" is left in the hands of the reader who, given a box of 150 unbound pages, each consisting of a strand of narrative, has to shuffle them and read them in any order. Instinctively seeking to impose a linear sequence to the novel, the reader is always looking to make connections between the different fragments and becomes a conscious participant in the process of creating a whole out of the broken sequences, while at the same time "remaining aware that all narrative is an act of memory, and that memory is necessarily random". (Coe, 2011) As Saporta points out in is explanatory note to the first edition "the time and order of events control a man's life more than the nature of these events." (Saporta, 1961).

By these words the author is not simply inviting the readers to join the creative process, he is giving to them the fundamental task and responsibility of composing the order of the events in the novel, thus, making sense of it.

In 2011 publishing house Visual Editions released a new edition of the work[34], including printed and digital versions. As for the print, the aim seems that of affirming its value has an artefact.

34 The design of 2011 edition is by Matt Pyke at Universal Everything.

Fig 18 Composition n° 1, enclosing box (Visual Editions, 2011)

Fig 19 Composition n° 1, box's interior (Visual Editions, 2011)

It consist of an enclosing box decorated with swarms of random letters over a yellow background, as Johnathan Coe writes in his review of the book for The Guardian: "Merely holding the book gives you a sensual thrill. At a time when so many publishers are in a panic about the rise of electronic formats, here is an object whose visual and tactile beauty simply cannot be reproduced digitally". Inside, each page's back has a generative illustration that uses every word of the book.

The iPad app, updates the book for an interactive medium. The cover is also interactive, allowing the user to move the letters around. If, on one hand, the print version allows the reader to have access to the pages as a whole, physically shuffle them "comme un jeu de cartes" (Saporta, 1961) and read them in a random order while still having them all in their hands; in a way, the app is more effective at randomizing the narrative experience. It features an automated "shuffling" of pages, offering a deeper level of engagement by forcing users to keep their finger on a certain page in order to be able to read it.

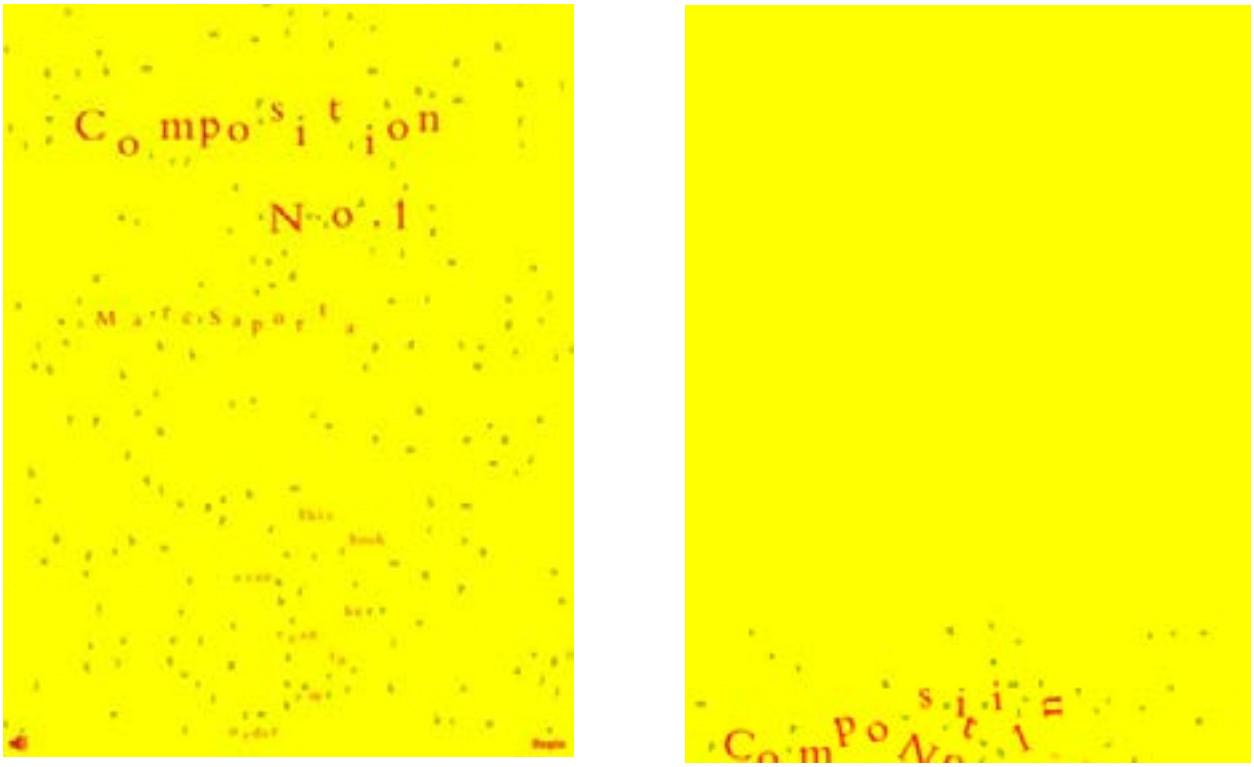

Fig 20 Composition n° 1 ,*IPad app interactive opening screen (Universal Everything, 2011)*

Also the possibility of having the work, as a whole, in front of you is applied to the digital version and taken a step further with an interactive generative image made of all of the words of the novel.

Nevertheless, this version of the work has some limitations on the point of view of usability. The automatic shuffling of pages obliges the reader to keep their finger on the screen while reading every single page, otherwise, the shuffle will immediately restart and it will be impossible for the reader to find that specific page again. The fact that the pages already read aren't accessible is also a limitation as it deprives the reader of the possibility to go back to confirm a forgotten particular or to just re-read a passage they had particularly liked. Although the book is 150-page long, the app seems to have been designed for not such a long lasting reading experience, making it difficult to interrupt it and come back to it after some time.

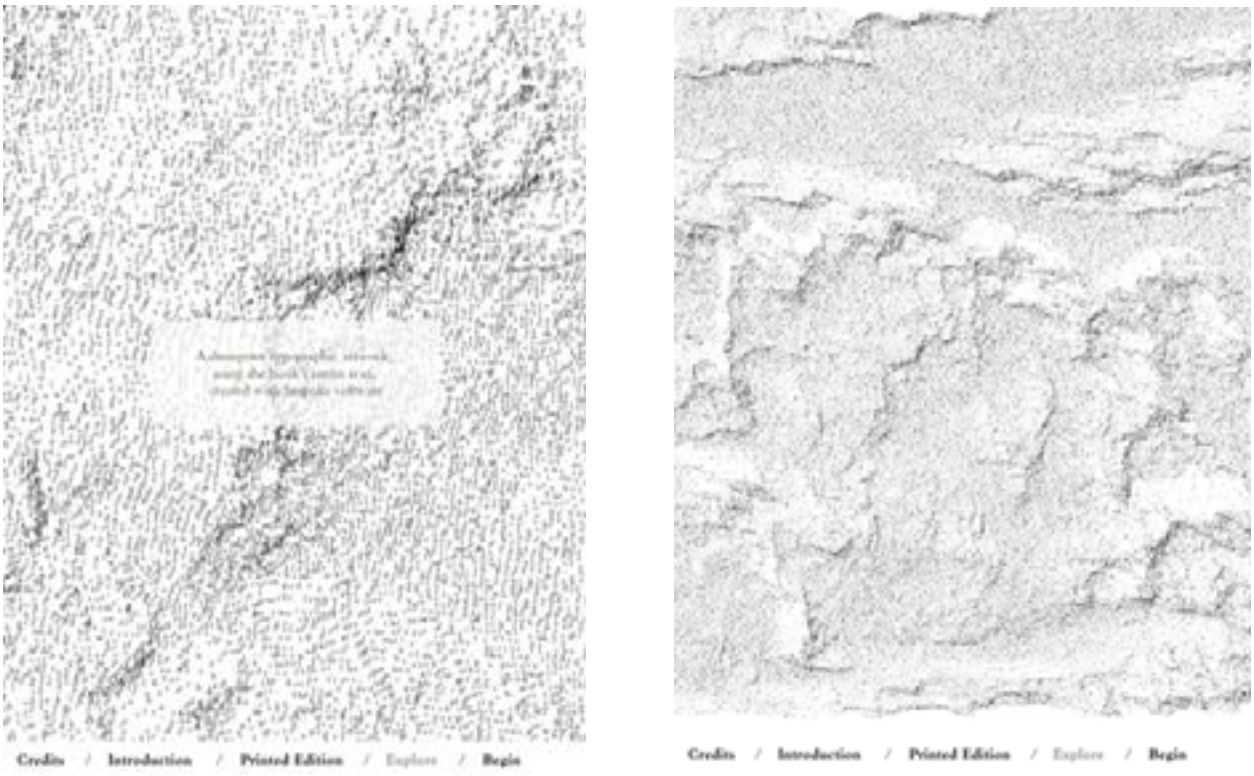

Fig 21 Composition n° 1, *Generative Image (Universal Everything, 2011)*

We have said that *Composition n° 1* is an interactive novel. Media theorist Andy Lippman, of the MIT Media Lab defined interactivity as "mutual and simultaneous activity on the part of two participants, usually working towards some goal, but not necessarily".[35] Lippman also offers five corollaries:

- *Interruptibility*: participants should be theoretically able to trade roles during the interaction, as speakers do in conversation, and not simply take turns in occupying the more active or more passive roles in the interaction.
- *Fine granularity*: actors should not have to wait for the "end" of something to interact, with true interactivity being interruptible at the granularity level of a single word.
- *Graceful degradation*: the parties involved can still continue the interaction without interruption, even if non sequiturs or unanswerable queries or requests enter into it.
- *Limited look-ahead*: goals and outcomes in the interaction cannot be completely predetermined at the outset of the activity by either of the two parties, with the interaction created "on the fly" or coming into being only at the moment gestures, words, or actions are expressed.
- *Absence of a single, clear-cut default path or action*: parties in the interaction cannot have definite recourse to a single or "default" path, one available to them throughout the interaction without their having to make any active decisions for interaction.
- *The impression of an infinite database*: actors in an interaction need to be able to make decisions and take action from a wide range of seemingly endless possibilities. (Lippman, 1988, qtd in Douglas, 2000, 43)

Many of this elements, however, like the words, paths, and actions available as interruptions, are often chosen in advance by the author of the interactive narrative and not by the reader. It is this aspect that, as Aarseth claims, mitigates, in hypertext fiction, the medium's possibilities for being defined interactive, classifying it, instead as participation, play or use (Aarseth, 1997). Still, readers can meander around an interactive narrative in a manner not possible in print or cinema, the reader explores and even-

35 Stewart Brand, *The Media Lab: Inventing the Future at M.I.T.* (Penguin, 1988), p. 46

tually become aware that their actions may have disconnected from some aspects of the plot:

> Interactive narratives, in fact, do not generally reward random explorations of the text—except when they happen to intersect with the plot's challenges and conundrums by pure chance—they offer readers a series of options for experiencing the plot, rather than the singular skein that connects print novels and stories. (Douglas, 2000, 44)

According to Wardrip-Fruin, as soon as interaction is introduced into a system, the audience is providing elements of the work that would otherwise have to be provided by the author. In an exploratory hypertext systems this is only the order of the texts, whereas in constructive hypertext system this also includes the contribution of new links, texts, and the editing of existing content. (Wardrip-Fruin, 2003, 73)

In general we can say that an interactive narrative is concerned with providing a rich framework within which individuals can construct their own narratives, or groups can engage in the shared construction of narratives. (Mateas, 2002)

Journey stories work especially well in digital medium as they intensify agency by uniting, the playful and problem solving aspects with active navigation. (Murray, 1997) In his paper *Language as a Gameplay: toward a vocabulary for describing works of electronic literature* (2012), Brian Kim Stefans states that creators of electronic literature are progressing toward a more pervasive use of the ludic element in their works. Stefans defines it as "the spirit of play inhabiting not just the writing and not just the programming, but both in an elaborate, symbiotic combination" (2012). To create a programmed object that is also a piece of literature means to create something that can be read, but also instills in the reader the playful attitude that makes them engage towards an achievement that all games have, the reader engages with the piece with a competitive attitude, rather than with the only desire to continue an aesthetic experience (Stefans, 2012). In this sense we can say that interactive fiction may represent the meeting point of narrative and games, merging the pleasure of reading with the enjoyment of the ludic aspect of it and the "player's pleasure of influence. (Aarseth, 1997).

In the documentary *Get Lamp* (Scott, 2010), about text adventure games, director Jason Scott interviewed several long time players of games such as *Adventure* and *Zork*, all highlighting the sense of immersion and participation that text adventure environments give, without the employment of any graphic, 3D scenarios or sophisticated virtual reality tools. The immersiivity that text offers is similar to that which is experienced when reading a book, as text communicates directly to the reader's brain stimulating their imagination so does a text adventure software, with the additional feature of enabling the reader to do things, ask questions to the software and have an influence in the world they are exploring. Moreover, the playful aspect was enhanced by the extensive use of puzzles that sometimes took several passages, a great extent of logical thinking and often collaboration with fellow gamers to solve.

From an interview for *Get Lamp* with Paul O'Brian, an interactive fiction author:

> When I played Zork, I felt like I was in that world and the computer screen disappeared and it was like reading a book, only even cooler than reading a book in certain ways because I could do things in that world. (2007)

Also interviewed for *Get Lamp*, Richard Bartle, co-creator of MUD[36] points out how text is able to talk straight to the imagination, in a text adventure you are not seeing a picture and typing about it, on the contrary, you read text and type text. The software and the player interact with the same language, inputs and outputs look exactly the same on the black screen enhancing the sense of participation of the player. Therefore, the player is encouraged of imagining the whole world they are exploring, rather than relying on one provided by a team of designers.

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36 Multi-User Dungeon is the first text adventure game to played in the internet by multiple players.

Fig 22 Adventure opening screen (Adventure International, 1979)

In a time in which graphics and visual effects played a great role in the evaluation of a computer game, text adventures undertook a completely different path, in which all of the responsibility for the setting was put back on the player's mind and his ability of imagining mesmerizing scenarios and keeping track of intricate labyrinths. Moreover, multi-user online text adventure games, including text based Multi-User Dungeons (MUDs) and avatar spaces, create actual social environments in which groups co-construct ongoing narratives that intertwine and influence each other. Interactive fictions, make use of a conversational interface in which the player and the computer exchange text; the player types commands that they wish to perform in the world and the computer responds with descriptions of the world and the results of commands.

In 2014 Dejobaan Games released *Elegy for a Dead World*; a writing game where the visuals play an important role: consisting of hand painted scenarios picturing lost worlds from the writings of English romantic poets Keats, Shelley and Byron it serves as an inspiration for the player to write about the game itself.

Fig 23 Elegy for a dead World*, Logo(Dejobaan, 2014)*

The meta game aspect is incorporated by the creation of a journal and the encouragement to take notes. By the time they finished wandering one of the worlds, they players will have a full piece of literature that they can share with other players or even send to a self-publishing website such as Lulu or Scribd to have a digital or printed illustrated version of their *Elegy*. During an interview for *Eurogamer*, co-creator Ziba Scott affirms that the objective is to put players "in the mood to be in this fiction and be a part of it, versus giving you proper word processing tools, which is not sexy and not inspiring... We had to find this balance that would get you excited to write for a short period of time[…]. What we're trying to do is motivate people so they get into a mindset where they have something they want to put out and write" (2013)

The game is then aimed at stimulating the creativity of the player, as Dejobaan's CEO Ichiro Lambe affirms: "People love being creative and I don't think there are many games that are conducive to this kind of creativity.... I bet we'll get a novella-length thing within a couple months of launch." (2013)

Elegy for a Dead World contributes in a practical way in inspiring the player/writer by not leaving complete freedom, guiding them, instead, in the composition of the text. After choosing one of the three worlds, the player is given different possibilities for the piece that they are going to compose, including a free-verse poem, a first-person diary, a journal by scientists exploring the uninhabited world and investigating about it and others. According to the choice, the player receives different kinds of cues and suggestions that serve as a guidance in the simultaneous exploring of the world and writing of their own literary piece. It is not just writing what passes through the player's mind, the game consists in impersonating a writer, in choosing a particular genre, narrator and style and sticking to it.

Fig 24 Elegy for a Dead World *(Dejobaan, 2014)*

In a game where there is no mission but that of exploring and writing about what you find, the real achievement is that of having other people, players or not, to appreciate your piece. With Scott's words: "In some ways it's not even a game. We're actually rewarding an achievement that has real merit and value, that actually has some significance that you should be proud of." (2013) In *Elegy for a Dead World* text is not a channel of communication with a software, rather is the aim of the game itself, there is no different objective from that of writing, the visuals and the journey are at the service of the text, they serve as inspiration, context and illustration. They were inspired by the writings of Byron, Keats and Shelley and they are there to inspire more writings.

Fig 25 Elegy for a Dead World *(Dejobaan, 2014)*

4.4 THE SENSE OF AN ENDING: CLOSURE IN NONLINEAR NARRATIVES

The concept of ending is intrinsic to the concept of classical Aristotelian story: the story is "a whole . . . [with] a beginning, a middle, and an end," where the beginning "does not itself follow anything by causal necessity," and the ending "itself naturally follows some other thing, either by necessity, or as a rule, but has nothing following it". (*Poetics*, Aristotle qtd. in Douglas, 2000, 91)

The reading dynamics made of linking and anticipations, naturally long for a completion, for the moment in which all the hypothesis, the expectations, hopes and worries of the reader about the story will be either confirmed or dismantled but, in any case, resolved. As readers we traverse the most complicated and puzzling of texts, keeping faith in the belief that everything will make sense at the end.

> Endings, in other words, either confirm or invalidate the predictions we have made about resolutions to conflicts

> and probable outcomes as we read stories, watch films, or speculate about the secret lives of the couple across the street. (Douglas, 2000,92)

On the other hand we have seen several works, either in print or digital form, in which this linearity of expectations is not realized, works that leave their sequence either to chance or to the readers, providing them with a multiplicity of possible versions in which they can be experienced. (Douglas, 2000, 120)

Nevertheless, in the case of a printed text, the reader can get to the closure of the physical object, can traverse the text until its end, for much indeterminate, open, and puzzled the story can be, once reached the last page there is nothing more to read or anticipate. There can be questions that stay open to the personal interpretation of the single reader, but there will be nothing new to read, the text itself can only be re-read. Even as regards works such as *Composition n° 1* or *Cent mille milliards de poèmes,* the reader holds all of the text in his hands, they can ideally go through every page, in every possible combination, knowing exactly how much they have read and how much is still left to read.

On the contrary, works such as text adventure games, require many hours of play to be solved, sometimes to discover that the solution that will get you to the end is only to be found outside the game, on a satellite web site, a forum or fellow players. An hypertext novel like *Afternoon* has no table of contents, no numbered pages or chapters, the author himself tells the readers to decide for themselves when to consider the story ended:

> Closure is, in any fiction, a suspect quality, although here it is made manifest. When the story no longer progresses, or when it cycles, or when you tire of the path, the experience of reading ends. (Joyce, 1987)

But as Murray argues: "This is closure as exhaustion, not as completion" (Murray, 1998, 174). This kind of ending does not satisfy the reader in search of Aristotelian perfection. It does, though, value the process on the result and the responsibility of the reader on his own reading experience. The interactivity, the reader's freedom seen as liberation from the dictatorship of the author, also implicates to renounce to an already made finale.

In his book *Sense of and Ending: Studies in the Theory of Fiction* (2000),

Frank Kermode argues that the power of narrative lies in its movement toward its closure, toward an apocalyptic moment in which all of our believes are submitted to judgement. As Stefans states, most works of electronic literature tend to avoid this apocalyptic moment: "What you are left with, then, is a series of more or less disparate experiences extending in an endless chain before and behind you". (Stefans, 2012)

The end, considered as *Apocalypse*, can also be feared, the lack of a definitive closure ideally means reversibility of all that the reader feels uncomfortable with. As we have seen with *The Garden of Forking Paths*, in which the main character is partly relieved from the sense of guilt for the murder he committed by the hypothesis that it may have happened just in one of the infinite versions of reality; in the same way in hypertext and interactive fiction the reader is enabled to change the ending if it doesn't satisfy them. They are enabled to come back and try to make different choices in order to get to a different result. Like in videogames, when the character dies and you start the game all over to try and not commit the same mistakes.

Of course, the lack of an ending in its traditional sense can also be considered as a virtue if we consider the literary work as the mapping of the ever growing and ever changing rhizome that is contemporaneity. According to this reading then, reality would not be a unicursal labyrinth but a maze without an exit, a maze that finds its sense in the multiplicity of its paths and different versions of the world, not in completion. A puzzle, that is not solved when you get to the exit, rather when you have processed all of its possibilities, when you get to know it and orient yourself around its intricate paths, when you are actually able to map it. Differently from the ancient Greek consideration of perfection as something that has to feature an end to be considered complete, the rhizome finds perfection in being uncompleted, undetermined and progressing.

4.5 Conclusion

In this chapter we have seen how nonlinear narratives contemplate a range of different reading experiences, depending on the extent of freedom given to the reader, on their power of influence and on the extent of interactivity they present. In all of this cases we can say that the reader plays an active role. In fact, they have to engage in an effort that can go from discerning whether a first person narrator is reliable or finding their way in an intricate labyrinth to choosing the order in which to read narrative fragments or exploring worlds and solving puzzle in order to move forward. All of this procedures increase the importance of the experience of traversal, especially in the cases in which this relies upon the reader, with no author's persona to provide a coherent sequence of events or an elucidative resolution. If given complete freedom the reader is left alone, in the difficult task of finding their way in a labyrinth with many *aporias* and no guarantee of *epiphany*. Nevertheless, the lack of a resolution can alleviate the reader's responsibility. The lack of completion leaves space for alternative endings, for regrets of past choices or even for a reading that doesn't end at all.

CHAPTER V

PROJECT: ***ROTATOR***

Fig 26 Rotator, *Illustration*

5.1 INTRODUCTION

Rotator consists of a picture book and appBook for children produced in collaboration with illustrator and designer, Cátia Vidinhas. For the final project of her Master in Multimedia, Cátia is carrying out a study on the way visual narratives adapt to the shifting from analog to digital medium. In this context I collaborated with her with the aim of creating two different narratives, one for a printed book and one for a mobile application that are connected, complementary but independent from one another, making the most of the specific expressive potential of the two different media. Whereas we worked together on the general concept and on the different features of the print and digital versions, Cátia dealt with the design, illustration and developing of the two products while I wrote the text for the book and the script for the application.

The project served as a case study for this dissertation and as an output for of the theoretical concepts developed in the previous chapters; accordingly, we will analyze and explain the elaboration of the narrative through the same approach that we held analyzing nonlinear narratives as a genre: *Rhizomatic Structures, The Author, The Medium, The Reader.*

Fig 27 Book inside back cover

Fig 28 AppBook opening screen

5.2 RHIZOMATIC STRUCTURES

In both the print and digital versions *Rotator* is characterized by a non-linear structure.

Several storylines cross and proceed in parallel, in what can be called a circular, palindrome-like structure for the printed book and a mosaic and multivoice structure as far as the digital version is concerned.Central to the storyline is the theme of cycles. The story, shows the circularity that characterizes the existence of things, from human beings, to plants and animals, to the sun and the moon. The same circularity is mirrored in the structure of the narrative. The book is divided in two parts, one that sees the sun as narrator and represents the day and the warm part of the year, the other, in which the moon takes the role of narrator, telling her path through the night and the coldest part of the year.

Fig 29: ,Book covers

The narrative allows multiple readings: starting from the beginning of the section narrated by the sun (the first page of the book), starting from the beginning of the part narrated by the moon (the last page of the book) or starting from the point in which sun and moon meet (the middle of the book) and continuing in one or the other direction. This mechanism is possible thanks to the fact that the text of each page is independent from the preceding and following one and that both covers are designed as if they were the main one. The title too allows a double reading, *Rotator*, is in fact a palindrome word, one that is the same if read from left to right or from right to left.

An important theme in the production of the print version is the relationship between text and illustrations.

Fig 30: scene 2

Rather than having drawings that literally show what the text tells in words, we opted for a book in which text and visuals are related but somehow independent, leaving to the reader the tasks of, on one side making connections with the text and, on the other side, following storylines that exist in the illustrations but that the text doesn't make explicit.

Starting reading from left, the first half of the book sees the sun as a narrator, describing its cycle in relation with the other elements that complete the landscape: "If I'm not around it is because the little plants down there need rain to grow taller and taller..." (*Rotator*, p. 2)

While the sun makes his way from dawn to sunset and in parallel from the beginning of spring until the heart of summer, the illustrations show more storylines: a tree growing, birds migrating, a hedgehog waking up from hibernation and a kid and his family, growing and getting old.

When the sun sets, and the reader gets to the end of the first half of the book, the narrating voice passes to the moon, who tells about her cycle along the night, and in parallel, the end of summer, autumn and winter. The end of the book ideally coincides with the beginning of a new cycle, that can be read all over again from the first page.

The idea of more storylines all happening simultaneously is emphasized on the digital medium, as some of the elements of the illustrations are animated and, when tapped upon, open text windows that allow the single elements to be narrators of their own cycles, resulting in a multiple voice narrative.

The result is the building of a system based on paths that connect cross and branch, and that the reader can explore in the order they prefer. The aim is of showing the mosaic and cyclic aspects of the natural world through a narrative that is itself circular and structured as a mosaic. If contemporary reality is a *chaosmos* that can be mapped as an ever growing and ever changing rhizome, then nature can be seen as a rhizome too, but one that is characterized by an extent of harmony, given by the constancy, regularity and predictability of the phases and cycles of its elements.

5.3 THE AUTHOR

Rotator is conceived and structured to provide the reader with multiple possibilities of reading: a multicursal path based on choosing the order of sequences as far as the picture book is concerned and on deciding whether to know more on a specific animated element rather than another in the application.

Hence, we can say that the narrative changes at every different reading. The reader is, to some extent, responsible for their own reading experience, being it more or less linear or fragmented. Nevertheless, the *intentional network* of the work is highly influenced by the authors. All the possible different readings were planned and organized in a set of possible paths. Specifically, in the printed book the sequences were written to be read in different orders and still making sense from a syntactical point of view; in the application, only some elements either are associated with a text window or present an animation, that is only activated at the reader's tapping. In case of need, an *help* button is available giving hints on which elements of the illustrations allow interaction.

Fig 31 After pressing the help button the areas that allow interaction are highlighted

In this sense authorship can be considered procedural as instructions are given to the reader in order to put them in the condition of playing an active role in the reading of the text. As far as the reading experience is concerned the focus is kept on the process, being the message that the narrative aims at transmitting more connected and interdependent with the structure itself than coming from the contents. The labyrinthine structure that maintains a conceptual circularity mirrors the natural cycles, characterized by branches, fragmentations and abrupt changes of direction, but always within the circular nature of their living path. Accordingly, in the application, tapping on the tree, we can read how it originates an apple that is eaten and then left on the ground so that a new tree is born from its seeds, but tapping on a broken branch, we can read about that same tree serving to light a fire in winter.

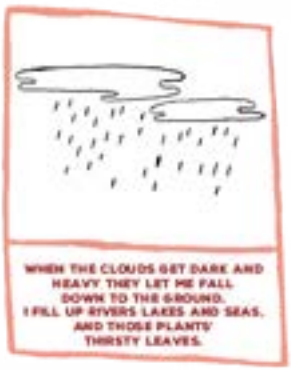

Fig 32 Water *text window*

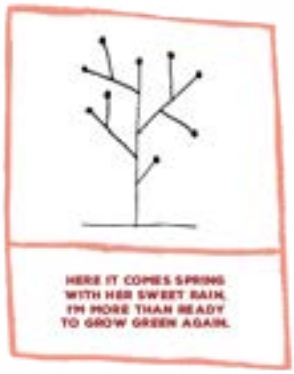

Fig 33 Tree *text window*

The same cyclic repetition of phases is shown to happen in human life, along both the print and digital book, the illustration show the life of a family corresponding, on one level to the parts of the day from dawn to night and, on another level, to the season of the years, from spring to winter.

The work was conceived to be explored according to these patterns of nonlinearity and circularity, the message the authors want to transmit consist of the process of reading itself, of the way of traversal of the text that mirrors the behaviour of natural elements.

5.4 THE MEDIUM

As far as the medium is concerned, *Rotator* aims at using the specific characteristics of the two media at their most, consequently enhancing their creative and expressive potentials.

As a result, the book was designed to make a statement as an object; to be looked at, touched, overturned and manipulated. Its illustrations are characterized by bright colours that gradually pass from a warm predominance in the first part of the book to colder nuances in the second part, when night, autumn and winter come; the paper is of good quality to be felt under the fingers and leafed through by a child; the size is large enough to be of easy use for a child but small enough to be portable. Moreover some elements of the illustration feature pop-ups, hiding their growth or transformation (e.g.: apple-cake, water-ice) and enhancing the manipulative characteristic of the book as well as making it more accessible also to children who can't read yet.

Fig: 34: pop-up

Also the application is thought for being more appealing to a reader who isn't actually able to read yet; in fact, it was conceived to stimulate one more of the five senses: hearing. Natural soundscapes are introduced relating to the animated elements and a narrating voice accompanies the reading of the main textual narrative with a line highlighting the words as they are being read. Interaction also plays an important role, for each screen the reader has to find out which of the elements can be animated with a tap and open a text window telling their life cycle.

Fig 35 In the appBook the text is underlined while the a voice reads it

Although featuring interactivity and animations the application keeps its identity as a book, with a navigation from screen to screen that reminds of the movement between pages. Nevertheless, it is important to point out that the application and printed book are complementary but independent. Each of them presents feature that are specific and only available on that particular medium. The book, for instance, includes pop-ups while the application, apart from animations and sounds, also allows additional text narrative that was kept implicit in the printed book. As a result the ap-

plication has more narrative voices, in addition to the sun and the moon (narrators in the printed book and in the main narrative of the application), the digital media make it possible for other elements to become narrator of their own cycles.[37]

In *Rotator* the media, analog and digital, are far from being "transparent", on the contrary, the aim is that of exalting their specific properties as creative tools. The same narrative has something new, both in the shifting from analog to media and viceversa, those additional contents, being them pop-ups, a paper nice to the touch, sounds or animations are related to the exhaustive use of one specific medium. Readers of *Rotator* are encouraged to be aware of the medium, directly experiencing what makes their experience different shifting from the book to the application. In this sense *Rotator* is a dynamic system that includes all of the narratives in the two media, and it is impossible to think it or analyzing it irrespective of them.

Fig 36 AppBook, scene 4

37 Namely: water, the hedgehog, the tree, the birds, the flowers, the apples, the stars..

Fig 37 AppBook, text windows, scene 4

Fig 38 Pop up scene 3

5.5 THE READER

The target reader of *Rotator* is a child aged 4-7, the age in which children are learning to read, a mixture of simple text and an appealing visual narrative seemed to be the best way to offer to them a product they could actually enjoy and find appealing, without dispensing with some challenge.

As we have seen, the reader in nonlinear narratives assumes an active role in the traversal of the text. In this sense, *Rotator* leaves some extent of freedom to the reader. One can in fact decide to read the book from the beginning until the end, and explore the application in a linear way, only listening to the narrators' voices, without engaging in finding out which are the animated elements and what the text windows tell about them. If the reader opts for this possibility, their role would be completely passive, notwithstanding their experience being somehow incomplete.

The ideal readers of *Rotator* are those that engage in profiting from all of the project's features, they would approach the book reading it in different directions and try to understand who is the narrator in the first and second part, simultaneously they would follow the visual narrative of the child and his family and play with the pop-ups thinking about the future of the elements on the front and behind the movable portion of the page. They would then move to explore the application, reading it in different direction, letting the narrating voices help in the reading, trying to find out which elements can be animated and open all of the available text windows, finding connections among the cycles of the life of the different elements. The reader is then given the freedom to choose whether to be passive or active, whether to enjoy the playful aspects of the work or not.

The same can be said regarding the closure. Both the printed book and the application have a "last page", it is possible to read everything that is available and consider the narrative closed. Nevertheless, ideally, the narrative has a circular structure, every end can correspond to a beginning, like in nature, the death of everything is always the birth of something else.

5.6 CONCLUSION

This project was developed with the objective of serving as a case study for the concepts exposed throughout this dissertation. As a consequence it was analyzed here, according to the same themes carried out with a theoretical approach in the four chapters of the work.

We can conclude that *Rotator* is an example of a nonlinear narrative, characterized by a circular and palindrome-like structure with multiple storylines and narrators that allows the reader on experimenting in different reading dynamics. Moreover, the text can't be analyzed disregarding of the media in which it unrolls, as the play a vital role in both the structure and the content, representing not just a tool, but rather an important part of the message. *Rotator* was, in fact, conceived to be considered as a whole with its media and with its possible readings.

Fig 39 AppBook entrance screen

CONCLUSION

Throughout the four theoretical chapters of this work we have seen how the study of nonlinear narratives is strictly related to the study of digital media as creative tools.

The properties of digital media happen to be particularly suitable to host nonlinear narratives, enhancing their navigation and interactive characteristics. The medium seems to be less and less transparent, less and less only the carrier of the content. Content and medium are dynamically related, making of a text, a *cybertext*.

This said, we have also seen how examples of nonlinear narratives can be found also before the invention of digital media, works of ergodic literature are an evidence of how the focus had begun to move from the data towards the process, even before the computer, the tool designed to process information, was invented. Nevertheless we have also seen that the computer seems to be the most suitable medium to host a nonlinear environment. However, it is also important to notice that, as far as works of hypertext literature and text adventure games are concerned, the works we have analyzed saw their peak of popularity between the 1980s and 1990. What most of these works have in common is the use of minimal graphic, and often no sound or animation, the immersivity and participatory aspects of the works are all for the textual part to convey. Probably, the decrease in popularity of these works can be related to an increasing focus on the visual experience. We can assume then, that as paper has to enhance all of its characteristics as an object to be an appealing medium for nonlinear narratives, then also all of the properties of digital media should be used in a dynamic way. Computer seems the most suitable tool to represent the net of relations that is contemporaneity, through the links that connect lexias in an hypertext, or the puzzles and labyrinths one has to overcome to solve a text adventure game, we can see the rhizomatic reality that Deleuze and Guattari described. Nonlinear by definition, the rhizome can be considered as a pattern to describe reality while building it, a *medium* to map the contemporary world and navigate in the dynamic relations that determine it.

Within this context, the project we presented, *Rotator*, wants to be a practical output. A narrative that was thought to be enjoyed as a process happening both in analog and digital media, to be explored in all of its branches and voices and whose content and message is intrinsic in the process of traversal.

A reasoning on the limitations of this work should start with its extension. Certainly, a greater amount of case studies would have brought more material upon which to
ponder and draw conclusions. Nevertheless, within our time limitations, we tried to choose a selected set of works that could serve as good examples especially because of the set of relations they had with other works in a different medium. In particular, one of the objective of this dissertation is to build relations between themes and procedures of traditional and digital literature, this is why, the main tendency in choosing the case studies was the attempt to keep this direction.

Another limitation can be seen in the lack, in some occasions, of more detailed technical explanations that could have helped the complete understanding of how some works of digital literature work. This would have required a further research on our part and would have been more time consuming. Nevertheless, we tried to hold on the whole work, a more theoretical and philosophical approach, drawing upon technicalities only when it was strictly necessary to make a specific concept clear.

With a dialectic analysis focused on the agents of nonlinear narratives we have contributed in the understanding of how the dynamics between author, medium and reader work both in digital and traditional literature. Nevertheless, a future research in this field should certainly include more works, probably be more specific and accurate on the technical specifications and consider the possibility of analyzing in a more direct way the behavior of authors and readers in the creation and consumption of nonlinear narratives. This could happen through interviews or by directly following an author in the production of a piece and, at a later stage, the reading dynamics different readers can adopt while approaching the work.

As far as the project is concerned, the main limitation can be considered, once again, its extension, as, more time could have made possible to compose a longer, richer and more complex web of storylines. Moreover, the focus, has been more on the usage of the two media than on the content of the narrative, future plans should include a more dense work as far as the narrative is concerned with equal attention on the usage of the media.

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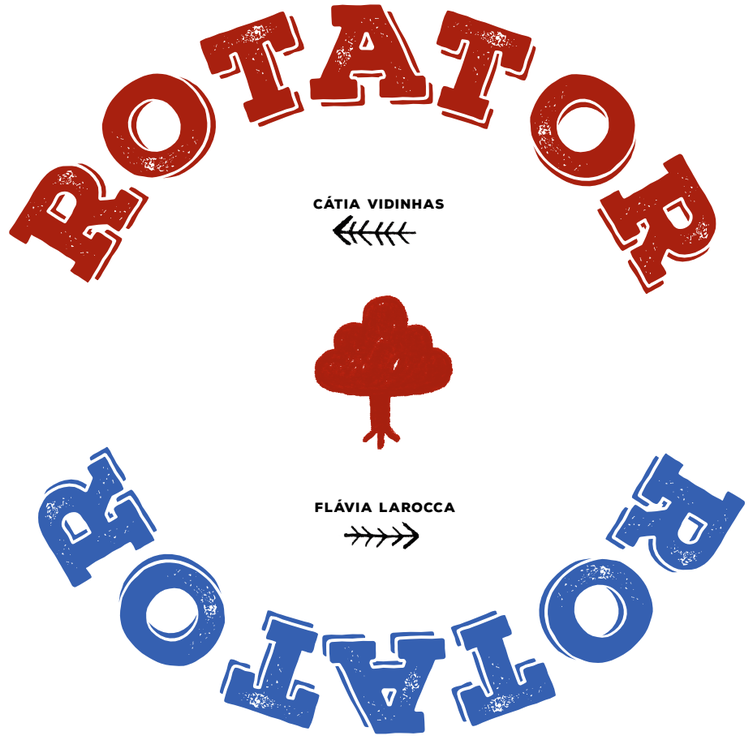
ATTACHMENTS

1. *Rotator* appBook demo, available at https://youtu.be/7-g6syVWcYc
2. *Rotator* picture book (pdf version)
3. *Rotator* teaser available at https://www.youtube.com/watch?v=VjOKpkKcEC0



ROTATOR

ILLUSTRATIONS BY CÁTIA VIDINHAS
TEXT BY FLAVIA LAROCCA
DESIGN BY CÁTIA VIDINHAS

ORIENTATION BY MIGUEL CARVALHAIS
CO.ORIENTATION BY MARTA MADUREIRA

ESTE É UM PROJETO DE CÁTIA VIDINHAS,
COM A COLABORAÇÃO DE FLAVIA LAROCCA,
PARA A DISSERTAÇÃO DE MESTRADO EM MULTIMEDIA,
DA FACULDADE DE ENGENHARIA DO PORTO.

To my grandmother.

IF I'M NOT AROUND IT IS BECAUSE
THE LITTLE PLANTS DOWN THERE
NEED RAIN TO GROW TALLER AND TALLER...

...SOMETIMES I'M JUST GRUMPY AND SHY.
IF I'M LUCKY I FIND CLOUDS LARGE ENOUGH FOR ME TO HIDE.

WHEN I'M OUT AGAIN EVERYONE
SHOWS UP TO SAY HELLO.
FLOWERS IN THE TREES,
SWALLOWS, CHILDREN,
AND THAT LITTLE HEDGEHOG TOO.

IN SUMMER I AM
AS STRONG AS EVER.
I ALWAYS STAY UP LATE,
YOU'LL NEVER KNOW
IF AN OLD FRIEND
COMES BY...

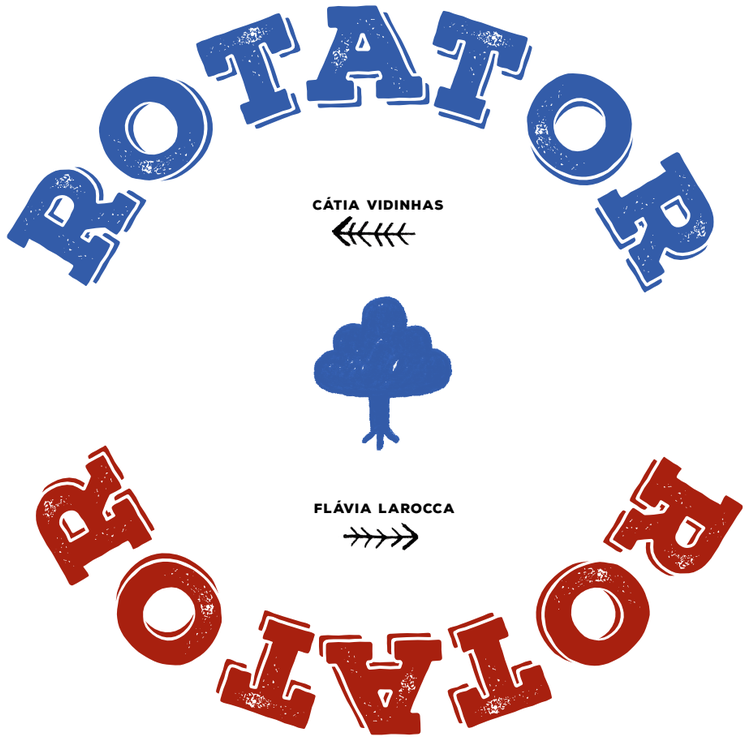
IN THE HOT DAYS I CAN SPEND SOME TIME IN THE LIGHT,
I HAVE AN OLD FRIEND WHO'S ALWAYS FUNNY
AND BRIGHT.. BUT YOU KNOW, MY REALM IS THE NIGHT...

MY FRIEND ALWAYS BACKS ME UP, REFLECTING HIS GOLDEN RAYS

I MAKE THOSE AUTUMN LEAVES SHINE AS SILVER PETALS.

IF THE INEXPERIENT HEDGEHOG
IS CAUGHT BY DARKNESS
TOO FAR FROM THE DEN,
I SHINE UPON HIS PATH,
FOR HIM TO GET HOME SAFE.

I OFFER THE MOST ROMANTIC SIGHT
TO KEEP THE HEARTS WARM
IN THE COLDEST OF THE NIGHTS.



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MULTIMEDIA MASTER
FEUP . 2015